

## USDA Reviews 1958 War on Pests, Diseases

### Campaign Ranges From Coastal Ports To Western Plains

WASHINGTON—The campaign by the U.S. Department of Agriculture against animal and plant pests and diseases ranged in 1958 from round-the-clock interception of foreign pests at U.S. ports and borders to hard-fought battles on western plains and in southern cattle pens.

Plant and animal quarantine inspectors of USDA's Agricultural Research Service stopped a destructive plant pest every half-hour at U.S. ports and borders and made sure that more than a million animals entering the U.S. were healthy. The figures cover the fiscal year ended last June 30. ARS meat inspectors inspected for wholesomeness, the production of more than 22 billion lb. of meat, mostly for American tables. ARS pest control and eradication workers, in cooperation with regulatory workers of affected states, concentrated efforts against 20-odd specific pests and diseases of crops and as many enemies of livestock.

Several animal and plant pests—the cattle fever tick, psoroptic cattle scabies, vesicular exanthema of swine, the Mediterranean fruit fly, and Hall scale of stone fruits—are nearly wiped out in the U.S., but the battle-grounds remain under close surveillance. For example, plant quarantine inspectors prevented the Mediterranean fruit fly from entering and reinfesting the U.S. on 100 occasions during the year.

The imported fire ant has been eradicated in several areas.

(Turn to USDA, page 17)

## NORTH DAKOTA DEALERS TOLD:

## Fertilizer Offers Best Means Of Increasing Farm Income in Present Price-Cost Squeeze

FARGO—Fertilizer dealers attending their 10th annual conference with research and extension people at North Dakota Agricultural College Dec. 12 are convinced that fertilizer business in North Dakota has successfully passed its launching stage and is on its way into orbit as a general farming practice in the state.

It was pointed out at the session,

## Beltwide Conference Briefed On Growing Cotton for Profit

HOUSTON—How to grow cotton for profits and markets was spelled out by cotton research workers to some 800 cotton industry leaders at the annual Beltwide Cotton Production Conference held here Dec. 17-18.

Dr. Moyle S. Williams, chief agricultural economist, National Plant Food Institute, Washington, D.C., told the group that "there remains a substantial gap between the amount of plant food that research indicates should be used and that actually being used. There is evidence that the gap is being narrowed, but at a much slower pace than many think necessary if cotton farmers are to enjoy profitable returns."

Dr. Williams estimated cotton belt farmers are using only about 60% of the plant food the experiment stations in the 16 cotton producing states indicate would be needed for most efficient production.

The dollars and cents, as well as labor saving, advantages of chemical weed control, were outlined by Dr. W. C. Shaw, U.S. Department of Agriculture, Beltsville, Md. He reported conventional weed control costs in cotton amounted to \$18.50 per acre, requiring an average of 27 man-hours per acre while chemical methods cost

an average of \$13 per acre and need 12 man-hours per acre.

"If we could apply this saving, made possible by present efficient chemical weed control methods, to the approximately 15,000,000 acres of cotton being planted each year, the total savings could amount to \$75,000,000 annually," Dr. Shaw said. "This is a striking example of how weed research can aid in returning savings to producers."

Robert W. Coker, president, Coker's Pedigreed Seed Co., Hartsville, S.C., said that the cotton industry must back a vastly expanded program of research to combat the multi-million-dollar annual loss to insects.

"We must have a vastly stepped up program of basic and applied research which will hold a reasonable hope of some day removing from around the necks of southern cotton growers the millstone of needless insect losses and excessive production costs," Mr. Coker said.

Mr. Coker pointed out that between 1909 and 1954 the boll weevil destroyed well over \$7½ billion worth of cotton and cotton seed. The annual loss attributed to the boll weevil's appetite is \$363 million.

The resistance of boll weevils to agricultural chemicals was discussed by Dr. M. E. Merkl, USDA entomologist at the Delta Branch Experiment Station, Stoneville, Miss.

Dr. Merkl said that status of boll weevil resistance is dynamic and changing and that this condition is affecting some state recommendations. Variations in the resistance

(Turn to BELTWISE, page 20)

## —But Insect Problem Exists—

## Russia Ready for Big Cotton Production Rise, Visitor Claims

HOUSTON—Russia has the land, water, know-how and people to do the job of increasing its production of cotton a considerable amount in the next 10 years, according to Dr. Billy M. Waddle, supervisory research agronomist with the U.S. Department of Agriculture, Beltsville, Md.

Dr. Waddle was a member of a U.S. group which visited Russian cotton production areas this past fall. His observations were given at the Beltwide Cotton Production Conference here.

Contrary to many reports, Russia has insect problems, Dr. Waddle said. Insects include bollworms, spider

mites, cut worms, aphids, and the hollyhock seed borer. The latter is closely related to the pink bollworm. Available insecticides are used in large quantities but the chlorinated hydrocarbons are not produced in quantity.

Serious cotton diseases exist in Russia, including bacterial blight, seedling disease, and verticillium and fusarium wilts. Cotton breeders are trying to breed resistance into some of the varieties.

The speaker told the meeting that Russia is a very progressive and aggressive country in the field of cotton production. An increase of some 50% is planned by 1965. This is to come from new land and planned increase per unit of land, Dr. Waddle said.

In general, farming practices are similar to those of the irrigated areas of the southwestern United States. Essentially all cotton is irrigated, and tractors are the source of power for land preparation, planting, and cultivation. Fertilizers, particularly nitrogen and manure, are used extensively.

## Inside You'll Find

What's New .....	10
What's Been Happening .....	12
Oscar and Pat .....	13
Over the Counter .....	14
Weed of the Week .....	16
Editorials .....	22
Advertisers' Index .....	23
Classified Ads .....	23

## NAC President States Position on Miller Amendment

WASHINGTON—While the pesticide industry agrees that the Miller Amendment is a "good sound law," it believes that there can be developed some simplified procedures for determining toxicity and for registration of products for use in agriculture, J. V. Vernon, president of the National Agricultural Chemicals Assn., declared at a recent conference here.

Mr. Vernon, vice president of Food Machinery and Chemical Corp., New York, appeared at a meeting of representatives of national organizations with Arthur S. Flemming, secretary of health, education and welfare.

The conference was scheduled by

(Turn to NAC, page 4)

Merry Christmas To Our Readers



**CORN CHAMP**—Percy Driggs, farmer from Moses Lake, Wash. (holding trophy), won the Grant County Five-Acre Corn Contest by growing a 200.8 bu. an acre yield. Here he tells Bill Raugust, Odessa Trading Co., and Jack McConkey, Wilson & George Meyer & Co., how he did it.

## 200.8 Bushel Corn Yield Nets Farmer 'Corn Champ' Crown in Washington

MOSES LAKE, WASH.—Thirteen Grant County farmers received certificates for producing over 120 bu. corn an acre at a banquet in Moses Lake recently. The Five-Acre Corn Contest, which was sponsored by the Grant County Extension Service and the National Plant Food Institute, found Percy Driggs, Moses Lake, growing 200.8 bu. corn an acre to place first in the contest this year.

In second place was Lynn Whitaker with 191.9 bu.

Mr. Driggs received a trophy for placing first in the contest. The trophy was donated by the local seed and fertilizer dealers. All contestants who produced over 120 bu. received a certificate of merit.

George Delany, county extension agent, and chairman of the Grant County Corn Club, stated that the contest has stimulated a lot of farmers thinking about higher yields and how this can lower production costs.

Research conducted by Mr. Delany and his staff indicates that it costs about \$100 an acre to grow corn in the Columbia Basin.



R. H. Beatty

**BACK FROM EUROPE**—R. H. Beatty, agricultural chemicals research director for Amchem Products, Inc., formerly American Chemical Paint Co., has returned from Europe. He was invited there to present a special paper on "Herbicides and the American Farmer" before the fifth British Weed Control Conference held at Brighton, England. Mr. Beatty, past president of the Weed Society of America and the Northeastern Weed Control Conference, discussed some of the newest developments in American chemical weed control and summarized current procedures in the use of herbicides with vegetable crops.

"If a farmer averages 80-90 bu. an acre he just breaks even, whereas if he gets 120 bu. an acre or better, his net return per acre goes up fast. Good management is the difference between breaking even and making a good net return per acre," Mr. Delany stated.

Mr. Delany's harvest records indicated that the contest winner used 180 lb. of actual nitrogen (N) and 105 lb. of phosphate (P<sub>2</sub>O<sub>5</sub>) an acre on his record crop. The five acres sampled for the contest averaged 22,467 stalks an acre, and 21,550 ears an acre. Planting date was April 30 and harvesting date was Oct. 21.

Previous crops on the land were corn, peas, and corn (for the last three years).

"The data we obtained as to how Mr. Driggs managed his corn acreage indicates that his yield was no accident," Mr. Delany stated.

Emil Nelson, experiment station agronomist and banquet speaker, stated that corn was an important crop for Columbia Basin farmers and predicted that farmers in the area would be averaging over 100 bu. per acre in a very short time. He said that contests of this type were very valuable in pointing the way to higher yields and more profitable farming.

### Heavy Mouse Population Threatens Iowa Evergreens

AMES, IOWA—One of the highest mice populations in recent years has been largely responsible for the heavy attacks on evergreen seedlings, Lee Andreas, assistant forester of Iowa State College, reported.

The mice, Mr. Andreas pointed out, gnaw the bark. This may ultimately result in the tree's death. In some parts of the state, he added, the mice are even nibbling the tops off the seedlings.

An active campaign can reduce the damage. Bob Moorman, wildlife specialist of Iowa State College, recommends removing all weedy cover near the young seedlings.

Another way to cut down the damage, Mr. Moorman added, is by poisoning the mice with grain treated with strychnine. Bait stations can be made from medium or large-size tin cans and placed through the area.

To keep birds, pets and other animals out of the poison, leave the lid partially attached and open just far enough for mice to get in. Add a small handful of poisoned grain and lay the can on its side. This makes it easily accessible and helps keep the grain dry, he added.

The bait stations should be checked weekly, replacing grain as needed. The poisoned grain can be obtained from local feed and orchard suppliers, Mr. Moorman concluded.

## Shell Chemical Forms Four New Divisions

NEW YORK—Richard C. McCurdy, president of Shell Chemical Corp., has announced a company reorganization effective Jan. 1, involving the formation of four additional fully-integrated divisions, bringing the total of these to five.

Each division will be headed by a general manager and will engage in one of the five main lines of business of the company. These are agricultural chemicals, ammonia, industrial chemicals, plastics and resins, and synthetic rubber.

Under the new arrangement, the head office will be mainly concerned with matters involving more than one division, or of interest to the company as a whole. In the head office organization four vice presidents will do the work.

The present vice presidents are Leo V. Steck, Cecil W. Humphreys and George R. Monkhouse. Since Mr. Steck has reached retirement age, Mr. McCurdy announced the appointment of two new vice presidents, Bernard M. Downey, now general manager of manufacturing operations, and George W. Huldum, Jr., now manager of the company's chemical sales division. Mr. Monkhouse, who is at present in charge of the ammonia division in San Francisco, will move to New York.

The new agricultural chemical division will be headed by Sumner H. McAllister, now manager of the agricultural chemical sales division. It will handle all functions pertaining to the products now sold by that division, including the plant at Denver, Colo.

The ammonia division, already an integrated operation, will be headed by Lawrence M. Roberts, now manager of operations in that division.



C. Lee Alberts

**SALES REPRESENTATIVE**—C. Lee Alberts has been appointed sales representative of Mississippi River Chemical Co., according to John L. Sanders, sales manager. Mr. Alberts attended the University of Illinois one year before joining the Air Force during World War II. After completion of three years of service, he transferred to St. Louis University where he graduated in 1949. He then accepted a commission during the Korean Conflict in which he served two years. After being released from the Army, he entered the fertilizer business as a mixed fertilizer salesman with a midwestern manufacturer. Prior to joining Mississippi River Chemical Co., Mr. Alberts was employed as sales representative with the Southwestern Potash Co. Mr. Alberts will make his headquarters in Sikeston, Mo.

## Oklahoma Dealers Hear Preliminary Results Of Farmer Survey at Fertilizer Conference

STILLWATER, OKLA.—Sixty percent of some 1,350 Oklahoma farmers said they ranked soil testing first among sources of information on forcing a decision on the kind and amount of fertilizer they would use on their land.

This was one of the many facts pointed out at the dealer session of the recent fourth annual Oklahoma Fertilizer Dealers Conference and fourth annual Crop and Soil Conference held at Oklahoma State University here.

Dr. Lester Reed, of the university's agronomy department, and Dr. James Plaxico, of the agricultural economics department, presented preliminary results of a personal interview survey of farmers concerning fertilizer usage, conducted by county agents in 40 Oklahoma counties.

Some of the other points uncovered with the survey include:

- 82% of the farmers were between 31 and 60 years old.
- 25% had eight years of schooling or less and another 49% had 12 years of schooling or less.
- County agents were considered by the largest number of answers as the top personal contact educational media on new farming practices; neighbors were ranked a close second and Soil Conservation Service personnel were third. Others had relatively minor influence.
- Farm magazines were considered outstanding among sources of information creating interest and promoting first application of commercial fertilizer.
- 69% of the farmers said they used more fertilizer on owned land as compared to rented land.
- 65% said they used more fertilizer on long-term leased land as compared with short-term leased land.
- 54% said their future plans called for use of more fertilizer, 43%

said they would use the same amount and only 3% said they would use less.

In other business, John Stogner, county agent, stressed the value of fertilizer dealer-county agent cooperation in his county. He told of successes in getting dealers out to see demonstrations after he had taken them on a tour through the soil testing labs.

R. L. Beacher, National Plant Food Institute Southwest regional director, presented slides and discussed the NPFI program in the Southwest. He described the intensified soil fertility programs underway in Texas and Louisiana areas, soil test promotion projects with bankers in these states, demonstration publicity projects in Oklahoma, and research grants in Arkansas and Texas.

### S. B. Penick & Co. to Change New York Office Location

NEW YORK—On Jan. 1, the general offices of S. B. Penick & Co. and its New York Quinine & Chemical Works Division will move to 100 Church St., New York 8, N.Y., the company announced.

The move is being made to modernize the company's facilities and to consolidate its operations, a spokesman said.

Telephone numbers for both Penick and NYQ will remain the same. The teletype number for both Penick and NYQ will be TWX NY 1-3461.

Since 1940 Penick has been located at 50 Church St., where NYQ joined the parent company in 1951.

A historical coincidence has been disclosed in connection with the new location. Penick's first offices in New York City, established in 1915, were located at 45 Barclay St. That building occupied part of the site on which 100 Church St. now stands.

## Missouri Farmers Suffer \$16 Million 1958 Cotton Loss Through Diseases

COLUMBIA, MO.—Diseases took a \$16 million bite out of the 1958 Missouri cotton crop, say two University of Missouri field crops specialists.

Marvin Whitehead, plant pathologist, and Joe Scott, extension field crops specialist, say plant diseases kept at least 95,000 bales of cotton from reaching Missouri markets.

Besides the \$16 million cash loss to farmers, there was an additional loss of business to farm labor, railroads, trucking companies, suppliers, compressors, storage facilities, and other phases of the industry.

Diseases are a major factor in cotton grade reduction as well as a limiting factor in yield, they say.

This loss occurred even though 1958 growing conditions were generally good for cotton plant and unfavorable for disease development.

Early rains kept farmers from planting cotton until the soil had warmed to the almost optimum temperature for rapid plant development. Heaviest loss from seeding diseases occurs during seasons when cotton is planted in cold and wet soil.

Soil moisture didn't limit growth during the summer and near perfect fall weather conditions were ideal for a fast harvest. The dry and clear harvest period prevented excessive losses from boll-rotting micro-organisms.

Major cotton diseases occurring in Missouri during 1958 and their estimated effects on yield were bacterial blight, 7½% loss; fusarium wilt 5% loss; root knot and other nematodes, 5% loss; verticillium wilt, 3½% loss; boll rots, 2% loss; seedling diseases, 1% loss; other parasitic diseases, 1% loss; and ascochyta blight, 0.2% loss.

Mr. Whitehead and Mr. Scott said seedling disease and nematode damage are the only two cotton enemies in this group that can be controlled by chemical means. The other diseases, and nematode damage as well, can best be controlled through the development of disease-resistant varieties.

Research may prove that it's also possible to control seedling diseases through plant resistance.

A good example of possible benefits of research in the development of disease-resistant varieties can be seen in the performance of Auburn 56, a fusarium wilt-nematode resistant variety. This year, when planted on infested Missouri areas, it produced twice as much as the varieties more commonly grown in such areas.

Plant breeders now have selections that will outperform Auburn 56 in Missouri.

Severe soil-borne diseases, such as fusarium wilt, nematodes, and verticillium wilt, need immediate attention before more of Missouri's delta soils are infested. Organisms that cause these diseases may live in the soil for several years once they gain access to a field.

Cotton-breeding programs for the development of varieties resistant to the fusarium wilt-nematode complex, verticillium wilt, and bacterial blight have been started in southeast Missouri at experimental fields near Bertrand, Dorena and Sikeston.

Chemicals for control of seedling diseases are being tested at Sikeston and Malden. The in-the-furrow fungicide-testing program has shown that this method of treating the covering soil at planting time is profitable insurance against stand loss.

An early, healthy cotton stand makes for heavy fruiting and an early harvest while crop quality is good and prices highest.

Cotton usually suffers higher disease loss than other Missouri field crops, say Mr. Whitehead and Mr. Scott. However, the same general picture exists for each of the major crops as far as the percentage losses from diseases are concerned.

### Piper Building Crop Dusters and Sprayers

LOCK HAVEN, PA.—A new airplane designed solely for applying agricultural chemicals for crop improvement and insect control has been developed by Piper Aircraft Corp. of Lock Haven.

The "Pawnee" will go into production in the first quarter of 1959. It is

a low-wing monoplane with tricycle landing gear.

The plane is the first model to come out of Piper's new development center at Vero Beach, Fla., directed by Fred E. Weick, aeronautical engineer.

The Pawnee is a 150-h.p. airplane with a useful load of 1,100 lb., a hopper capacity of 110 gal. or 20 cu. ft.

### PLANS LONGER MEETING

TRENTON, N.J.—New Jersey's State Agricultural Convention, held annually in Trenton for 44 years, will be expanded to a two-day session this January, according to an announcement from Phillip Alampi, secretary of agriculture. The dates are Jan. 26-27. The convention is the principal event of New Jersey Farmers Week, scheduled for Jan. 26-31. More than 40 statewide agricultural organizations will meet in Trenton during this period, Mr. Alampi said.

### Shade Tree Conference To Meet in Chicago

CHICAGO—About 400 visitors are expected to attend the 14th annual meeting of the Midwestern Chapter of the National Shade Tree Conference to be held Feb. 18-20 at the LaSalle Hotel here.

Problems of concern to all who are interested in the care of trees and shrubs will be discussed. Attendance is not restricted to membership in the conference.

Equipment and supplies used in arboricultural and gardening work will be on display throughout the three-day meeting.

The educational program will include such topics as: "Tools Useful in Diagnosing Tree Troubles," "Japanese Beetle and Control Methods," "Elm Bark Beetles—Spread and Control" and a symposium on "Dutch Elm Disease."

## The Measure of Quality



### MULTIPLE SCREENING....

NATIONAL POTASH assures you of controlled product size. Leading the way in precision-screening for greater quality control, NATIONAL offers a cleaner, better muriate for modern fertilizer manufacture.

Telephone, wire or write your order today.

**NATIONAL**

**POTASH COMPANY**

205 EAST 42nd ST. • NEW YORK 17, N. Y. • ORegon 9-4950

212 Bell Building • MONTGOMERY, ALA. • AMherst 5-8234

## Farmers Urged to Take More Active Part in Marketing of Their Products

DOVER, DEL.—The small farmer cannot stay in business unless he gets out of the "what will you give me for it" market, Edward Lipman of the National Cranberry Canners Assn. told 250 members of the Peninsula Horticultural Society at its 72nd annual meeting in the Capital Grange Hall here.

The sessions of the society were held Dec. 9-10. Mr. Lipman, John Nardelli, manager of the Cedarville, N.J., Cooperative Marketing Assn. and Loyal D. Odhner, managing director of the Pennsylvania Chain Store Council, agreed in successive talks that cooperative marketing is the answer to the small farmer's marketing problem.

Mr. Lipman told the meeting that the farmer is the only business man who takes the risks, invests the capital and does the work without having any control over the prices he receives for his product.

Labor is organized, business is organized and the buyer of agricultural products is organized, Mr. Lipman declared. "To be successful in marketing, the farmer must organize, too."

Mr. Odhner said that chain stores must have a large and steady supply of each product and that individual farmers cannot provide such a supply. He added that a large marketing organization representing many small producers could do the job.

Mr. Nardelli added to the argument for cooperative marketing. He said producers need "larger and stronger organizations to play in the same league with larger and stronger buyers."

The big chain stores are buying in larger units and cooperative marketing agencies need to grow in order to provide larger units, he declared.

"The little producer does not need to be forced out if he will join with other small producers," Mr. Nardelli said.

In the opening session, the growers along with agricultural research workers and representatives of commercial firms serving agriculture heard their problems described as a "battle for markets."

To win the prize—selling large quantities of Delmarva-produced vegetables and fruits in the neighboring vast market area takes much more than just being located nearby, W. T. McAllister, extension farm economist with the University of Delaware, told the growers.

New officers were elected at the society's business meeting. The new president, replacing Robert Rider, Bridgeville, Del., is Richard Allen, Salisbury, Md. The new vice president is Frederick W. Haas, Middletown, Del. Robert F. Stevens, Newark, Del., remained as secretary, and Herbert F. Richardson, Dover, Del., continued as treasurer.

A tomato grower's dream was described by Robert Phillips of J. Richard Phillips Co. to the vegetable section at the meeting.

To stay in the tomato business, this is the kind of tomato we need, Mr. Phillips said: "A deep red color

with deeper color inside than outside . . . resistant to cracking . . . longer tomatoes with less prominent shoulders and a slightly pointed tip to reduce 'cat faces' at the tip which must be hand removed . . . a tart 'east coast' flavor . . . a tomato solid throughout . . . a tomato that can stand in the field seven to 10 days without deteriorating."

"Such a tomato would allow uniform harvesting and keep the processor operating at top efficiency," he added. "This would mean a better return to the canner and higher price to the farmer."

Mr. Phillips said the farmer is not as interested in the price per unit produced as with net returns per acre.

## Severe Grasshopper Outbreak Expected In Saskatchewan

REGINA — Grasshopper outbreaks expected to rank with some of the most serious on record are forecast for a large area of Saskatchewan in 1959.

R. E. McKenzie, provincial plant industry branch director, says that the final forecast map indicates farmers will have a real battle on their hands in combatting grasshoppers. Compared to 1958, the map shows a 66% increase in the total area subject to attacks, a two-fold increase in "moderate" infestations, a four-fold increase in "severe infestations," while four small areas are in the "very severe" category, the first such areas since 1950.

The forecast area is roughly triangular in shape, extending from the extreme southeast corner of the province northwest to a point north of Saskatoon, and then southwest to the Alberta border. The extreme southwest corner of Saskatchewan should be free of outbreaks. The forecast area takes in about 140 of Saskatchewan's 300 rural municipalities compared to 116 in 1958. However, with favorable conditions for hatching in the spring, the severity of the outbreaks may greatly exceed 1958.

In 1958 over a million and a half acres were sprayed to control grasshoppers. In anticipation of the 1959 campaign the Saskatchewan Department of Agriculture is already making arrangements for the preparation of chemicals which will be supplied to farmers through the municipalities at cost prices, Mr. McKenzie said.

A copy of the 1959 forecast map will be distributed to municipalities early in January.

## American Potash Promotes Dr. David R. Stern

LOS ANGELES—Dr. David R. Stern has been named manager of research at the Los Angeles plant of American Potash & Chemical Corp., according to an announcement by Joseph C. Schumacher, vice president in charge of research.

The appointment was made following the recent promotion of Harold Mazza from manager of research to plant manager of the Los Angeles facility.

Mr. Stern joined the research staff of Western Electrochemical Co. at Culver City, Cal., in 1951 and, when that company was acquired by American Potash & Chemical Corp. in 1955, was transferred to the parent company's main research laboratory at Whittier, Cal., as head of the electrochemical section. In 1956 he became assistant manager at the Whittier laboratory until the current appointment.

## Fertilizer, Pesticides Boost Cotton Yields In Texas Area

PECOS, TEXAS—Some cotton producers in this area have made four bales of cotton per acre, while three bales to the acre is quite common. This makes the Pecos area one of the highest-yielding sections in the country. The average 10 years ago was about one bale of cotton for each acre.

Fertilizer and insect control have made the difference, plus better irrigation and cultural methods.

"I've seen cotton making nearly five bales to the acre," said J. N. Vaughn, manager of a well servicing company. "But this is farming at its very zenith of efficiency. The growers did everything humanly possible to get the last pound of cotton the soil would produce."

The average farmer will put on a pre-planting application of 100 lb. of ammonia, then sidedress with 60 to 100 lb. once or twice during the growing season. He will also apply from 300 to 500 lb. of a high phosphorus fertilizer for each acre.

After the crop starts fruiting, he will begin his insect control, and likely put on the first applications with farm machinery. After that he will pay a crop duster \$1.25 to \$1.50 per acre for dusting or spraying. Altogether the cotton field will be treated from six to 10 times.

"Production costs may run over \$200 an acre," said Mr. Vaughn, "so the farmer must raise yields as high as possible. Another factor in this increase has been the ever-dwindling cotton acreage. With land-owners allowed to plant only 35 to 40% of their farms in cotton, they must compensate for the loss by growing more per acre."

## NAC

(Continued from page 1)

Mr. Flemming to discuss health protection of the American people with particular concern for the manufacture, storage and distribution of foods. Mr. Vernon's comments refer to the Miller Pesticide Residue Amendment to the Federal Food, Drug and Cosmetic Act. Following is a summary of his remarks:

"During the course preparatory to shaping up and introduction of legislation leading to the enactment into law of the Miller Pesticide Residue Amendment, I am sure the records will support the fact that our association cooperated in every way possible—working toward the type of legislation that would not be harmful to our industry and at the same time adequately protect the public.

"We in the NAC association and members of our industry feel that the Miller Amendment is a good sound law and we are all learning to operate satisfactorily under it. There have been some rough spots, but with the vast amount of effort and education put forth by industry and government agencies, I feel good progress has been made, and we can expect better progress in the future.

"We believe there can be developed some simplified procedures for determining toxicity and for registration of products for use in agriculture. To this end a committee of our association has been working during the past year with both the Food and Drug Administration and the U.S. Department of Agriculture. Though we don't always agree, I feel that a continuing effort along these lines will be beneficial to everyone concerned in the pesticide business.

"I feel confident that diligence in cooperative attitudes working toward the common goal of making the use of pesticides a safe and sound practice will have resulting benefits to agriculture and the public in general not only in this country but throughout the world."



Frank S. Washburn

## Frank S. Washburn Observes 40th Year With American Cyanamid

NEW YORK—Frank S. Washburn, general manager of the agricultural division, American Cyanamid Co., celebrated his 40th year with the firm on Dec. 3 with another day's work in behalf of the organization founded by his father, Frank S., Sr., in 1907 as a one-plant, one-product (calcium cyanamide, a chemical fertilizer) company.

When Mr. Washburn joined American Cyanamid 11 years later as a field representative, the company was still building its organization up from the ground floor on three basic fertilizer products, cyanamide, Ammo-Phos and phosphate rock. Today the firm produces over 6,000 products for many industries.

Its agricultural line, with which Mr. Washburn has been associated for the past 40 years, has grown to include antibiotics, insecticides, animal feed supplements, veterinary drugs, animal biologicals, defoliants, herbicides, fungicides and fumigants.

After a six-year period of selling in the field, Mr. Washburn became division sales manager of the fertilizer division in 1924, assistant director of fertilizer sales in 1938 and director of fertilizer sales in 1939.

In 1947, the insecticide division was merged with the fertilizer division to form the agricultural chemicals division, with Mr. Washburn as director. This division subsequently became the phosphates and nitrogen division and, in 1958, was merged with the farm and home division to form the agricultural division, with Mr. Washburn as general manager.

Mr. Washburn was a director of American Cyanamid Co. from 1946 to 1955; president of North American Cyanamid, Ltd. from 1951 to 1958; and president and a director of Cyanamid de Mexico, S.A. from 1952 to 1958.

Mr. Washburn is a director of Goodman Manufacturing Co., Chicago; a director of the National Agricultural Chemical Assn., and a director of the National Plant Food Institute. He served on the Florida Phosphate Rock Producers Industry Advisory Committee of the War Production Board from 1943 to 1945, and was chairman of the Phosphate Rock Industry Advisory Committee of the Office of Price Administration from 1944 to 1946.

Mr. Washburn lives in New York City with his wife and daughter, Evalyn.

## TWO SHORT COURSES

NEW BRUNSWICK, N.J.—Two short courses, one in turfgrasses and the other in elementary landscape design and plant materials will be given at Rutgers University's college of agriculture during January. Turfgrass topics will be taught on Jan. 12-15.

## ADVERTISERS! a Double-Barreled



Opportunity in  
CROPLIFE'S F-PPE

## PRICE-COST

(Continued from page 1)

extension service, declared that economists of the service are describing use of fertilizer as "offering the best possibilities for expanding farm income" at a time when acreage and cost restrictions are limiting crop production.

Experiment station soil research men presented the group with a resume of trials and studies carried on in the experimental plots of the station at Fargo and at branch stations in the state.

Dr. J. C. Zubriski, speaking of the fertilizer needs of corn under dryland conditions, said that a 100-bu. corn crop requires about 60 lb. of nitrogen, 60 lb. of  $P_2O_5$  and 100 lb. of  $K_2O$ . Many soils on which corn is commonly grown in North Dakota cannot supply this quantity of plant food during the growing season.

"During favorable climatic seasons, fertilizer must be added to these soils, proper stands of a suitable variety planted and other desirable management practices maintained to get top yields of corn," Dr. Zubriski said.

The North Dakota station has investigated the amount of fertilizer to use and the number of seeds to plant per acre to produce higher yields of corn. This has been done during the past five years by conducting several field experiments each year.

Results of these trials show, where moisture was not seriously limiting growth and where favorable temperatures prevailed during critical periods, a band placement of fertilizer containing about 20 lb. of nitrogen and 40 lb. of  $P_2O_5$  per acre produced the largest increment of yield increase. In 29 comparisons this band placement increased the yield of corn grain over the check plots by 10 bu. per acre.

Commenting on new information on the use of fertilizer on flax, Dr. Zubriski told the dealers that low yields averaged by flax may be, in part, due to inadequate soil fertility or improper fertilization practices.

Four trials were performed at Fargo, Casselton, Buffalo and Finley—all in the east central part of the state—to test the effects of fertilizers and placement of fertilizer band upon yield of flaxseed, on nonfallow land. Fertilizers were significant in their increase of yield at three of these points. Placement of the fertilizer affected the yields significantly at all locations. The main effect was the reduction in yield for fertilizer placed in the row with the seed.

While the research with flax was not considered extensive enough to make firm recommendations, the experiment station has several suggestions. For higher yields of flax on nonfallow land, it appears 30 to 40 lb. of nitrogen per acre should be applied. More than 10 lb. of nitrogen per acre placed in the row with the seed may delay emergence, reduce stands or reduce yields, the dealers were told. Where more than 10 lb. of nitrogen per acre is to be applied as a band it should be separated from the seed.

Armand Bauer, supervisor of the state soils testing laboratory, which is located at North Dakota Agricultural College in Fargo, in discussing the application of phosphates for crop production, reported that trials show that for soils testing "very low" use of available phosphate at a rate of 25 lb. per acre increased the yield of wheat 1.3 bu. over the 15 lb. rate. Successive applications of 35 and 45 lb. per acre increased yields of wheat at a rate of  $\frac{1}{2}$  bu. per 10 lb. of phosphate. However, in the majority of 58 trials, either of these two rates increased yields in amounts larger than the cost of the phosphate.

It was pointed out by Mr. Bauer, however, that the first 15 pound ap-

plication of available phosphate applied in trials conducted on soils of four phosphate test levels produced the largest yield per pound of phosphate applied. The yields decreased in size as the levels of "available" phosphate in the soils changed from "very low" to "low" to "medium" to "high."

It was stated on the basis of this North Dakota work that "applying available phosphate by drill attachment is more efficient than broadcasting comparable rates, with respect to increases in the yield of the crop in the year application is made."

Application of 35 to 45 lb. of available phosphate per acre by drill attachment is being recommended by the North Dakota Experiment Station for wheat grown on soils testing

"very low" in phosphorus. On soils testing "low" rates above 25 lb. did not pay for the additional cost of the fertilizer. On these soils application of a minimum of 25 lb. of available phosphate per acre is recommended.

The results of 60 trials with small grain since 1954 in which nitrogen was used at two or more rates show that the use of nitrogen fertilizer on nonfallow land in general is quite profitable, according to Dr. Ralph A. Young, soil scientist of the North Dakota Experiment Station. This is supported by the observations of Mr. Bauer.

In 43% of the trials, rates of 40, 50 or 60 lb. of nitrogen per acre were more profitable than lower rates. In 20% of the trials 20 or 30 lb. of nitrogen were most profitable, while 30% failed to show a profit through the use of nitrogen fertilizer.

Dr. Young said most North Dakota

soils do not provide enough available nitrogen for maximum production of small grains, except after summer-fallow.

Current recommendations prepared by the experiment station on the basis of its trials and farm experience were reviewed by Virgil L. Weiser, soils specialist of the North Dakota Extension Service. He discussed the various fertilizer elements with the dealers, methods of application and amounts advised to give producers the most profitable results for the money invested in materials.

The economics of fertilizer use were outlined by Laurel D. Loftsgard, assistant professor of agricultural economics; George H. May, vice president of the First National Bank, Fargo, explained the banker's viewpoint of fertilizer use; and Zenas Beers, regional director of the National Plant Food Institute, spoke of the developing fertilizer market in the Midwest.



### Want to Grow More Dollars per Acre?

## MAKE TRONA<sup>®</sup> POTASH

YOUR ACTIVE PARTNER

**Muriate of Potash**  
60%  $K_2O$  minimum  
Regular grade  
Granular grade

Your crop dollars will grow with properly balanced fertilizers high in potash content. Abundant available potash produces quality yields, better sizing, builds healthier plant tissues, bolsters crop resistance to drought and disease... qualities that bring you higher prices at the market. Now is the time to think about your plant food program. Consult your agricultural advisor. Find out how TRONA POTASH, manufactured to premium standards, can be your active partner in bumper crop production.



### American Potash & Chemical Corporation

3000 WEST SIXTH STREET, LOS ANGELES 54, CALIFORNIA

**Sales Offices:** 3000 W. SIXTH ST., LOS ANGELES 54, CALIF. • 99 PARK AVE., NEW YORK 16, NEW YORK • 235 MONTGOMERY ST., SAN FRANCISCO 4, CALIF. • 1320 S.W. BROADWAY, PORTLAND 1, ORE. • 214 WALTON BUILDING, ATLANTA 3, GA. • 3557 W. PETERSON, CHICAGO, ILL. • 1600 FAIRFIELD AVE., SHREVEPORT, LA. • 21 E. STATE ST., COLUMBUS 15, OHIO



Charles Starker

### Charles H. Starker Joins Gandy as Promotion Director

OWATONNA, MINN.—Charles H. Starker has been appointed sales promotion director of the Gandy Co. here, it was announced by E. S. Gandrud, president.

Mr. Starker, who will make his headquarters in Owatonna, will travel nationally working with the manufacturers of granular chemicals, with federal and state research and educational authorities and with farm implement distributors and dealers. His primary responsibility will be to further the use of granular agricultural chemicals and Gandy applicator equipment.

A native of Oregon, he is a graduate of Oregon State College, with a B.S. in entomology. From 1937 to 1941 he did entomological field work for the Oregon Experiment Station.

After four years with the U.S. Army, Mr. Starker resumed his civilian career and was employed as research entomologist with Pacific Cooperatives of Portland, Ore. After 11 years with Pacific, Mr. Starker left to join the Los Angeles Chemical Co., Los Angeles, as assistant manager of its insecticide division.

### NPFI Awards Grant To Experiment Station

WASHINGTON—A \$2,500 grant has been awarded by the National Plant Food Institute to the Alabama Agricultural Experiment Station at Auburn to support research directed at improving soil test methods.

"Fertilizer applied in accordance with soil test recommendations returns millions of dollars in added income to Alabama farmers," said Dr. S. L. Tisdale, southeastern regional director of NPFI. "We are anxious to help in every way possible in the carrying out of this work."

The project, which is to commence Jan. 1, is under the direct supervision of Dr. R. D. Rouse, soil chemist and director of the soil testing laboratory at Auburn. "Chemical soil tests, when properly calibrated with crop response data, offer the best means of determining the lime and fertilizer needs of our important agricultural crops," he said. "We plan to use this grant to investigate further the response of forage crops to phosphate, potash and lime as related to soil tests."

The research ultimately will be carried out at a minimum of 20 locations on each of the major soil associations in the state. The first study will be limited to Norfolk sandy loam. Suitable areas with established stands of Coastal Bermuda, Bahia grass, and sericea lespedeza will be located within a radius of about 30 miles of Auburn.

## 'Old Timer' Plot of Ground Surprises—Yields 139 Bushels of Corn An Acre

URBANA, ILL.—A plot of land growing corn continuously for 83 years on the University of Illinois' Morrow plots produced a yield of 139 bu. an acre in 1958. The soil had received a manure-lime-phosphate treatment since 1904 and extra nitrogen, potash and phosphate since 1955.

Perhaps even more startling and significant were the results on another plot that produced yields of 130 bu. an acre. This land had also grown corn for 83 years but had received no plant food treatment until 1955. For the past four years it has received lime, nitrogen, phosphate and potash. For the three years just before the plant food treatment, yields had averaged only 23 bu. an acre.

The value of plant food treatments shows up easily when it is noted that corn yields averaged only 32 bu. an acre in 1958 on the continuous corn plots that had received no treatments during the last 83 years.

The apparently favorable yields on the continuous corn plots receiving plant food treatments do not mean that University agronomists are recommending a continuous corn program on Illinois farms. The Morrow plots show even more favorable yields when a crop rotation plan is followed.

On the section of the plots in a corn-oats-legume rotation, yields for

corn receiving only a regular manure-lime-phosphate treatment since 1904 averaged 140 bu. an acre. When nitrogen, phosphate and potash fertilizer treatment was added to one plot, yield hit 144 bu. an acre, a record high. On the rotation plot with no soil treatment, corn averaged only 63 bu. an acre.

These results further confirm what the agronomists have believed for many years: highly fertile soils on which a good rotation has been used along with soil treatments over the years will respond less to larger additions of fertilizer than will the poorer soils.

The record-high yields obtained on the Morrow plots in 1958 can be explained by favorable growing conditions, University agronomist L. B. Miller believes. He points out that the last four years have all been good corn years at Urbana. But even when growing conditions have been favorable, rotations and plant food treatments have produced some very important yield differences.

### Employment in California Chemical Industries Up

SAN FRANCISCO—Employment in chemical manufacturing industries moved upwards again in California during October. The new level was estimated at 38,600 as compared with 38,000 in September, according to the division of labor statistics and research of the California State Department of Industrial Relations.

The rise was seasonal, and the figure remained below October of a year ago, when the number of wage and salary workers numbered 39,400.

Average weekly earnings of the production worker segment dropped for the first time between September and October, from \$104.98 to \$102.48. This was the result of a fractional decline in average hourly earnings—\$2.51 in September and \$2.49 in October, and a shorter work week, down from 41.7 hours to 41.2.

The earning level was still above the previous October when the figures were \$98.06 per week, \$2.40 per hour, and an average work week of 40.8 hours.



John L. Tullis

### John L. Tullis Named Head of J. B. Beaird Co.

SHREVEPORT, LA.—John L. Tullis has been elevated to president and general manager of The J. B. Beaird Co., Inc., manufacturer of heavy steel products and a subsidiary of American Machine & Foundry Co.

Mr. Tullis, who has been executive vice president, succeeds J. Pat Beaird, son of the company's founder and president since 1939, who announced his resignation, effective Dec. 31, in order to devote full time to outside interests. Mr. Beaird will remain as a director of the Beaird Co. and a member of the board of directors of American Machine & Foundry Co.

In addition to assuming the presidency, Mr. Tullis will also head Beaird International, Inc., and the Phoenix Corp. Mr. Tullis entered the company in 1947 as general manager of sales and was advanced to vice president of sales in 1954. In July, 1957, he was appointed executive vice president of the company and a member of its board of directors.

### ALABAMA FERTILIZER SALES

MONTGOMERY, ALA.—Fertilizer sales in Alabama during October amounted to 59,626 tons or 6,299 tons more than October 1957 sales. Most popular grade was 0-14-14, which sold 32,023 tons. Most popular material was ammonium nitrate with 4,428 tons sold.

## Safe Fertilizer Handling Discussed At Western Meeting

SAN FRANCISCO—Ways and means of handling fertilizer safely were discussed at the first school on accident prevention in the fertilizer industry to be held in the Far West.

The two-day school, held Dec. 2-3 at Fresno, was jointly sponsored by the fertilizer section of the National Safety Council and the National Plant Food Institute.

"If you discover the hazard, the correction can be found," W. C. Creel, North Carolina Department of Labor, and safety director of the council, told school participants. Mr. Creel recommended regular plant inspection and accident investigation as basic to discovering accident hazards in fertilizer plants.

The foreman's safety job was emphasized in maintaining plant safety by John E. Smith, Spencer Chemical Co. He stressed the key role of all line management and supervisory personnel, illustrating his talk with the film "No One Else Can Do It."

Another topic which received welcome response from those in attendance, according to an opinion survey made at the school, was "Personal Factors in Safety." S. Kirk Collins, safety consultant, City of Oakland, outlined unsafe acts of workers and management, underlining the value of good safety attitudes in plants. These attitudes, he said, were essentially the responsibility of management.

Other highlights of the school included a panel discussion on the safe handling of liquid fertilizers, a group discussion on the problems which participants would like to have solved, and addresses by other members of the industry and safety organizations.

O. J. Chinnock, Hercules Powder Co., presided as school director. Dr. Richard B. Bahne, NPFI western regional director, acted as school secretary and treasurer in preparing and setting up the session.



AWARD WINNERS—Robert G. Rupp (right), associate editor of The Farmer, St. Paul, Minn., and the staff of The Southern Planter, Richmond, Va., represented by Paul D. Sanders (left), editor, were honored by the National Plant Food Institute as the nation's outstanding agricultural writers who most effectively have carried messages of soil building to their farm magazine readers. Soil Builders Award for Editors plaques were presented to Mr. Rupp and Dr. Sanders at the annual meeting of the American Agricultural Editors' Assn. in Chicago on Dec. 3. Mr. Rupp was honored as the winning writer among magazines with less than 300,000 circulation and Dr. Sanders received the award, on behalf of his staff, as winner in the category of magazines with more than 300,000 circulation. The presentation was made by Louis H. Wilson, secretary and director of information for NPFI (center).

## South Carolina Group Told How to Attain Efficient Production

CLEMSON, S.C.—Efficient crop production and how it can be attained through sound management practices and high soil fertility were featured topics at the annual meeting of the South Carolina Plant Food Educational Society held here recently.

The meeting was attended by approximately 125 persons representing the various agricultural interests in South Carolina.

Robert Edwards, acting president of Clemson College, emphasized the importance to South Carolina of the soil fertility program which has recently been established in that state. Mr. Edwards' remarks were followed by a discussion of the land capabilities in South Carolina by Dr. G. H. Collings. Dr. Collings indicated that soil fertility was one of the principal limiting factors to crop production in the state and in the southeast in general. He did, however, emphasize that soil fertility alone would not make for efficient crop production. He stressed the importance of liming and good management practices.

S. L. Tisdale, southeastern regional director for the National Plant Food Institute, next discussed NPFI's interest in supporting the soil testing program which has recently been started in Edgefield County. He was followed by Hugh Woodle, extension agronomist, who outlined in detail some of the accomplishments of the Edgefield County program as well as some of the specific objectives which they had in mind. Mr. Woodle pointed out that the soil testing and soil fertility program could mean an increase in net farm income of over \$400 million to the farmers of South Carolina.

A panel discussion of the seven major crops produced in South Carolina was held next and was participated in by J. F. McLaurin, J. M. Lewis, Dr. W. C. Barnes, H. M. Henry, Richard Gettys, R. H. Garrison and Mr. Woodle.

The afternoon session was devoted to a film presentation of the Clemson-North Carolina game and a discussion of camellias and azaleas by Dr. Barnes, superintendent of the Coastal Experiment Station near Charleston.

The featured speaker at the evening banquet was Bruce D. Cloaninger, director of the fertilizer and inspection and analysis department at Clemson. Mr. Cloaninger outlined the importance of adequate and intelligent fertilizer use and stressed that cooperation between the industry and control officials was of the utmost importance to the success of South Carolina's agriculture.

### BEETLE BLASTED

MEMPHIS—The U.S. Department of Agriculture has started applying granular dieldrin to areas of this city in an effort to combat the white-fringed beetle which was discovered here 10 years ago. Plans call for the entire city to be covered in an attempt to eradicate the pest and stop it from spreading. The pest lives most of its life in the ground, feeding on plant roots. During the summer, adult beetles feed on weeds and cultivated crops.

### PACKAGING MEETING

WASHINGTON—A symposium on the packaging and transportation of chemical products sponsored by the Manufacturing Chemists' Assn. will be held at the Cleveland, Ohio, Engineering and Scientific Center on April 29-30, 1959, has been announced. The program now being drawn up by MCA's chemical packaging committee will deal particularly with new developments in packaging and transportation of dangerous products.

### HIGHEST LAND VALUE

CORVALLIS, ORE.—Oregon farm land values have risen steadily for four years and now stand at the highest level on record, reports Mrs. Elvera Horrell, extension agricultural economist at Oregon State College. Values of farm land in the state rose 2% this fall and now average 5% above a year ago, Mrs. Horrell said. This is 50% above the 1947-49 post-war average.

### MONSANTO APPOINTMENT

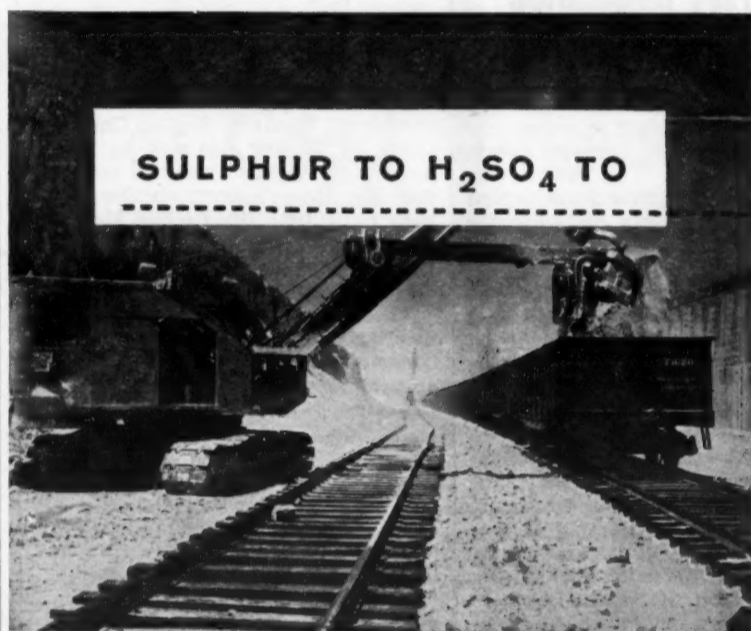
SAN FRANCISCO—R. L. Brandenburger, vice president, Monsanto Chemical Co., Santa Clara, has been appointed to the board of governors of the San Francisco Bay Area Council, it was announced by Edgar F. Kaiser, president of the council. Mr. Brandenburger is the company's senior representative on the West Coast and his duties encompass 11 states. He has been active also in civic and youth work.



**NEW BUILDING**—The University of Minnesota soil science department moved into its new million dollar laboratory-office building recently. The building is a four story brick structure, 42 ft. by 142 ft. There is in addition a wing 27 ft. by 41 ft., making a total of 37,000 sq. ft. Besides offices and the usual research laboratories, there is a section for the soil testing service, classroom and laboratories for teaching, a radioisotope facility, cold storage, drafting room, shop and darkroom.



ONE OF THE FOUR STRONG  
PILLARS OF PROCESSING



**29% Fertilizer**  
(Superphosphate;  
ammonium sulphate)

**21% Chemicals**

**9% Petroleum**

**7% Paint & Pigment**

**5% Steel**

**4% Rayon**

**2% Others**

Tinker to Evers to Chance . . . Those of us with gray hair remember well that sure-fire, double play combination of the old Chicago Cubs.

Sulphur, too, is playing the major role in many an industrial 'double play'. With Sulphuric Acid as the keystone derivative, Sulphur is serving six major processing industries with big tonnages and countless others requiring smaller tonnages.

*In this connection, the following statistics may be of interest:*

The sulphuric acid industry consumes 82% of all elemental sulphur and its equivalent produced in the States. Of this 82%, about two-thirds comes from Frasch Process Sulphur and from the treatment of natural sour gas. The balance is from pyrite, roaster gases, recycling of spent acids, etc.

Texas Gulf, the leading producer of Frasch mined and sour gas Sulphur, has always been and will continue to be industry's reliable source of supply. Recently, a new mine in Texas came into production. Other developments both in mining and sour gas-treatment are nearing completion. To broaden its service to users of Sulphur, Texas Gulf recently

inaugurated shipments of molten Sulphur. Distribution centers are being set up.

To be a leader in industry, a company must give service and develop in anticipation of needs. This role, Texas Gulf Sulphur will continue to play to the best of its resources and ability.

SULPHUR PRODUCING UNITS

• Newgulf, Texas • Spindletop, Texas  
• Moss Bluff, Texas • Worland, Wyoming  
• Fannett, Texas



**TEXAS GULF SULPHUR CO.**

75 East 45th Street, New York 17, N. Y.  
811 Rusk Avenue, Houston 2, Texas

## Cotton to Cattle Change Can Enable Farmer to Boost Profits, USDA Says

WASHINGTON—Higher returns can be realized by farmers able to make fundamental readjustments in their farming establishments while adopting more up-to-date cultural practices and better organization of farming activity, a U.S. Department of Agriculture economic study of Piedmont cotton shows.

Advantages of converting a 132-acre South Carolina cotton farm into a 161-acre beef-cattle and small-grain farm were carefully appraised in the study, made by USDA's Agricultural Research Service in cooperation with the South Carolina Agricultural Experiment Station.

This basic change in farming activity on a representative medium-sized Piedmont farm would increase annual cash receipts from \$3,400 annually to \$9,022 annually within five years. These figures were projected on the basis of assumed prices and improved production practices.

Estimated annual farm income would rise during the same five-year period from \$900 to \$3,700, and returns to the operator for his labor and management would increase from a loss of \$190 annually to a net income of \$2,100. Meanwhile, it was estimated, the appraised value of the farm property (including land, buildings, livestock, equipment, stock, and seed) would rise from about \$16,000 to nearly \$35,000 by the end of the fourth year, and would then decline with normal depreciation to about \$27,000 at the end of the tenth year.

To accomplish such a beneficial transformation, not only would it be necessary for the farmer to engage in a new sort of farming, with the assistance of new methods and equipment, but also he would need to find new sources of credit to finance the change.

One of the first and biggest problems to be solved in making the change from cotton to beef and small grains is to acquire a beef herd. The study showed that the value of cattle on the original farm—\$330—would have to rise to \$10,000 during the first three years of transition. The large initial investment indicated by these figures would result from buying brood cows as soon as grazing can be assured by other changes in farm practice.

The plan outlined in the study calls for establishing a herd of 46 brood cows and a system of raising calves and selling them at weaning age, when they weigh 450-550 lb. Eight cows and three bred heifers would be bought the first year; five cows the second year, and 27 the third year. These, together with replacement heifers raised, would provide by the fourth year the kind of herd needed.

The major transition in farm activity could be made in the first three years, with minor adjustments continuing for seven more years. Changes in use of land would have to be tailored to fit this schedule.

The first year's adjustments would include bringing idle cropland into production, substituting grain sorghum and clover for corn, increasing the acreage of wheat and oats, double-cropping the oats with lespedeza,

and topseeding the pasture with crimson clover.

During the second year, 20 acres of cropland would be added to provide full use of the operator's labor. The usual percentage of woodland would amount to 29 additional acres. In the second year also, 40 acres of Coastal Bermuda grass would be planted for permanent pasture. During the third year, the changes in land use would be completed by discontinuing the cotton enterprise entirely and adding its acreage to the oat-grain-sorghum area.

Changes in the type of machinery and equipment used would be closely related to changes in the cropping system, production methods, and the livestock enterprise. First, a tractor-drawn planter and cultivator would replace workstock and mule-drawn planting and cultivating equipment. A grain drill and combine would have to be bought. The need for baled hay and straw would necessitate acquiring a side-delivery rake and pick-up hay baler by the third year. This would permit a saving of 40% or more over the usual custom rate of baling hay.

Crop sales would provide the chief source of cash during the transition, the study shows, but by the fourth year cash receipts from the beef herd would nearly equal those from sale of grain.

### New Jersey Regulation Checks Plant Imports

TRENTON, N.J.—The New Jersey Board of Agriculture has approved regulations governing the movement into New Jersey of vegetable plants from other states. The action was taken to safeguard New Jersey crops from injurious insects and diseases which might be introduced from such shipments.

The new requirements specify that all vegetable plants shipped into New Jersey must be certified to have been grown under an official certification program of the state of origin, or must have been inspected not more than three days before removal from the soil, and certified to be free of injurious insects, nematodes and plant diseases. The regulations, which go into effect immediately, will be enforced by the division of plant industry, State Department of Agriculture.

The movement of vegetable plants into New Jersey has increased in recent years. Vegetable growers now make wide use of plants started in the South during the winter months and planted in New Jersey in the spring. The practice insures an early start for commercial crops in this state.

### Fire Damages Idaho Plant of Simplot

CALDWELL, IDAHO—Fire of undetermined origin recently gutted the Simplot Soilbuilders plant west of here and unofficial estimates placed damage as high as \$100,000. Fire fighters successfully prevented the blaze from spreading to the Simplot food processing plant nearby.

Fertilizers, weed killers and insecticides were manufactured in the damaged plant. A fire severely damaged the same plant May 9, 1957, after which the plant was re-wired and other safety measures introduced.

### KENTUCKY MOSQUITO CONTROL

FRANKFORT, KY.—More than 76,000 acres were sprayed by airplane in Kentucky during the 1958 mosquito control program, according to the Kentucky Department of Agriculture. Most of the work was done in western Kentucky swamp areas.



**KICKAPOO OFFICERS**—Officers of Kickapoo Fertilizers, Madison, Wis., are shown above at a recent company meeting. Newest addition to the firm is Robert Kerrigan (second from left) who joined the company as production superintendent of the Stevens Point, Wis., plant. Others from left to right are: Carl Holtz, production superintendent at the Hillsboro, Wis., plant; Mr. Kerrigan; Robert Sherman, manager of the Hillsboro operations; R. B. Baldridge, manager of the Stevens Point operations, and D. W. Aitken, president and general manager.

## Two Industry Men Join NPFI Board

WASHINGTON—Two industry men were elected to membership on the National Plant Food Institute board of directors at a meeting of the NPFI executive committee in Washington, D.C.

Filling unexpired terms of two members who resigned will be Justin Potter, president, Virginia-Carolina Chemical Corp., and W. L. Dixon, Jr., president, Western States Chemical Corp. Mr. Potter also was elected to a term on NPFI's executive committee. Mr. Dixon's term on the board runs until June, 1959 while Mr. Potter's term continues until June, 1961. Executive committee members are elected on an annual basis.

The executive committee at its meeting also approved the following companies for membership in the Institute: Bennett & Clayton Co., Inc., Cranbury, N.J.; Bethlehem Steel Co., Bethlehem, Pa.; Hansen & Peterson, Inc., Mt. Vernon, Wash.; Michiana Chemical Co., Niles, Mich.; and Vorhes Chemical Corp., Charles City, Iowa. Michiana's membership will not become effective until the company begins production.

## Drouth in California Worst Since 1936

SACRAMENTO—California has been experiencing an autumn drouth unequalled since 1936 in weather bureau records and moisture is urgently needed to start range grass growth and to sprout fall planted grain.

Unseasonably high temperatures also have added to the concern of farmers and stockmen.

Floyd Hug, in charge of the weather bureau in Sacramento, said that since July 1 this year only .72 in. of rain has fallen and conditions have been similar over most of the state. The total here is more than 2 in. below normal.

The California Crop and Livestock Reporting Service said most areas of California lack adequate moisture for maintenance of pasture and range feed for cattle. The service said the unusual weather has caused increased irrigation of orchards and has delayed discing, spraying, fertilizing and planting of cover crops in most of the state's fruit and nut producing areas.

Only in the cultivation of vegetables was the dry weather of no serious consequence. The service said that soil preparation, planting and harvesting progressed at a normal rate. In some instances pre-irrigation was required to achieve good germination of newly planted crops.

## Soil Test a "Must" For West Virginia Farms, Agronomist Says

MORGANTOWN, W.VA.—Successful alfalfa growers in this state believe in soil testing, judging from the survey made by 47 county agricultural agents in West Virginia during 1958, R. J. Friant, extension agronomist at West Virginia University, pointed out. A total of 448 or 92.95% of the growers questioned said they had their soil tested for lime requirements before seeding alfalfa. Only 34 or 7.05% did not have a soil test made. However, most of these farmers applied some kind of liming material and "guessed" at the amount required.

Among those who had soil tested, 134 or 29.91% needed no lime; 28 or 6.25% needed 1 ton of pure, finely-ground limestone or its equivalent in other forms of lime; 169 or 37.72% needed 2 tons; 73 or 16.29% needed 3 tons; 36 or 8.03% needed 4 tons; 6 or 1.34% needed 5 tons; 1 or 0.23% needed 6 tons, and 1 needed 8 tons, according to the test.

Ground or pulverized limestone was used by 308 growers or 80.21% of those who applied some kind of liming material. Marl was used by 37 persons or 9.64%; burnt lime was used by 30 persons or 7.81%; hydrated lime was used by 7 persons or 1.82%, and wood ashes were used by 2 persons or 0.52%.

"Maintaining the soil in nearly alkaline condition or at a pH of 6.5 is a 'must' for successful alfalfa production," Mr. Friant said. "The regular, systematic use of lime is essential for all profitable farming in humid regions with 40 in. of annual rainfall such as West Virginia has. But alfalfa needs it especially for the activity of the nitrogen-gathering processes of the bacteria that live on its roots.

"Maintaining the soil in a nearly alkaline condition is necessary to get most profitable returns on money spent for fertilizer and seed," Mr. Friant continued. "The most successful alfalfa growers, and farmers generally, are those who use lime regularly and systematically on both crop and pasture land in accordance with a good lime requirement test."

### CROP MEETING

TORONTO—The annual conference of the Eastern Ontario Soil and Crop Improvement Assn. will be held Dec. 29-31 at Kemptville Agricultural School. A program has been arranged, during which there will be a special meeting for potato growers, Dec. 29.

*Monsieur,  
la Brigitte  
Bardot  
est bonne  
mais Croplife  
F-PPE est  
magnifique!*



## Annual 'Pancake Day' Brings Many Visitors to Store



THE OLSONS DON'T have far to go when they leave for work at the Mansfield Store in Conger, Minn., in fact the store is connected to their home. Don Olson, proprietor, is assisted in his daily chores by his wife, son Curtis and daughter Nancy. One of the Olsons' big merchandising jobs each year is their famous "Pancake Day."

By LAWRENCE A. LONG  
Editor of *CropLife*

To any casual observer who might have stopped at the Mansfield Farm Store at Conger, Minn., on a recent sunny but below-zero Saturday, the spectacle of scores of parked cars and throngs of people swarming over the premises would make him wonder what kind of attraction had caused this kind of action. The answer is simple, as any farm family within a 10-15-mile radius of the store could tell the inquiring stranger. It's the annual "Pancake Day" put on by Mr. and Mrs. Don Olson, proprietors of this merchandising-minded rural supermarket.

Hundreds of farmers, their wives and children residing in the store's marketing area now look forward to the annual festival of pancakes and sausages, held in the early pre-Christmas season. The families have reason to like this event. It has be-

come an occasion for meeting friends, partaking in generous helpings of free pancakes, sausages, coffee, cookies and doughnuts, plus candy and ice cream cones for the kiddies (or adults).

Another potent lure to the farm families is seen in the large number of prizes offered by the firm. Announcements are made every half hour of new winners, and gleeful squeals are heard as the person named may receive a billfold, costume jewelry, a basket of groceries or some other memento. As a grand prize, awarded at the end of the day, a seventeen-jewel watch is presented to a customer. Mr. Olson said that some 19 separate prizes were awarded during the day.

The pancakes were served in the store's ample garage building during the latest event, with about half a hundred guests being fed at a time. The serving, done cafeteria style, moved along smoothly amidst an over-all background of cheerful conversation and friendly greetings.

In fact, friendliness seemed to be the keynote of the entire affair. Both Mr. and Mrs. Olson were very much in evidence circulating among the crowd making sure everyone was greeted, and the clerks in the store itself were selling merchandise at a furious pace.

Since not all of the hundreds of visitors on hand could get into the eating quarters at once (and some of those who had eaten remain on hand for some time afterwards), the store itself was literally packed with people. Farmers from some distance away were taking advantage of their presence by ordering quantities of merchandise including fertilizers, feed, groceries, clothing and other farm needs. Farm wives visited with each other comparing notes on their children and chickens while others squeezed their way through the jammed aisles seeking additional merchandise for Christmas presents and other uses.

How did this occasion come about? Don Olson says that the original "Pancake Day" was held

(Turn to PANCAKE DAY, page 12)

## Big Companies Assisting Their Small Marketers Seen as Good Business Idea

By L. T. WHITE

Vice President  
Cities Service Petroleum, Inc.  
New York, N.Y.

More than 3 million U.S. small businesses are engaged in distribution. They are wholesalers, retailers and service enterprises. Many big companies in the manufacturing, construction, transportation, communication, utilities and financial fields sell to or through these small firms. Large businesses are constantly trying to increase the volume and efficiency with which their goods move through small marketers to consumers. However, many small marketers are unaware of the scope of the work their suppliers do along this line. They see only results. For example, they are told of a new model which has more consumer appeal, sells faster and installs easier. Or they are furnished new displays, samples and sales training.

Therefore, to show small firm managers what big companies do to help

smaller distributors, a survey was undertaken through the National Society of Sales Training Executives. Members of this organization are in charge of sales training programs in more than 100 large businesses. They instruct those who sell to small business and, as a group, they are familiar with the range of services being offered. This aid presents the survey's findings: more than 150 kinds of assistance made available by big companies to small firms. Perhaps it will reveal help that you could have obtained if you had asked for it.

### Customer Relations Work

Have you looked into the customer relations work of your big suppliers? To stay competitive, today, a small business owner must develop his capital, his organization, and his methods—at the same time he is developing volume. To meet this need, large business has begun to offer accounting aid, guidance in supervision

and advice on credit and collections. These have helped, but have not solved every problem. The operators of many small enterprises require additional management help to escape the cost-price squeeze and build stable, successful businesses.

One relatively new form of assistance starts when a large business organizes what is often called a "customer relations department." Such a group's first objective is to study the company's independent market representatives—such as jobbers, dealers, or service men. The group is separate from the big firm's operating organization. Having no quotas to fill and no routines to follow, such a customer relations department is mainly at the service of the independent distributors.

In this connection, Dr. A. M. Woodruff, president of the newly organ-

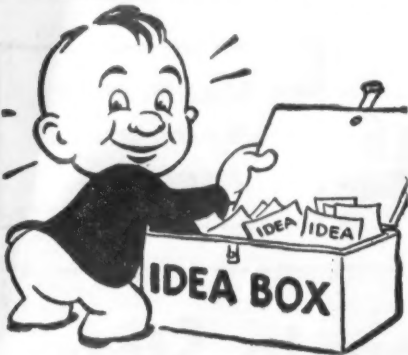
(Turn to BIG COMPANIES, page 14)



JUST PART OF THE CROWD that showed up for Olson's annual "Pancake Day" is shown in the photos above. According to Don Olson, proprietor of the



Mansfield Store in Conger, Minn., sponsor of the affair, more than 800 persons were on hand for generous helpings of pancakes, sausages and coffee.



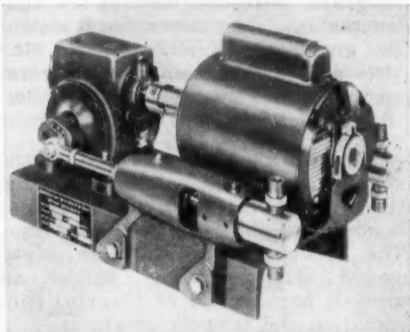
# What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

## No. 6844—Proportioning Pump

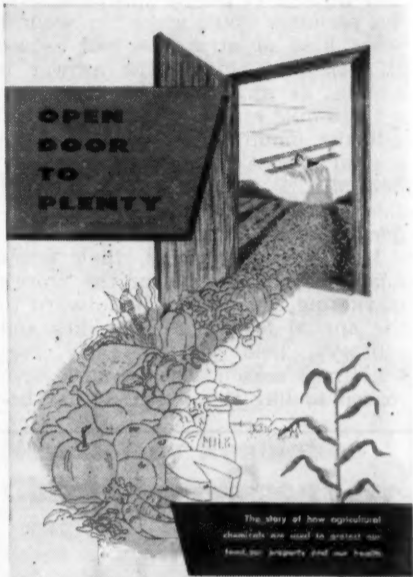
Series 100, controlled capacity pumps, introduced recently by American Meter Co., Pump Division, have been developed to handle many applications of specific volumes of fluids,



the company says. The company's Simplex models can handle capacities ranging from .65 gal. per hour to 13.10 gal. at a maximum pressure of 1,000 lb. per sq. in., the company said. Duplex models are rated at double the capacities of the Simplex models. To obtain complete details, check No. 6844 on the coupon and mail to this publication.

## No. 6846—Pesticide Fact Book

Publication of the "Open Door to

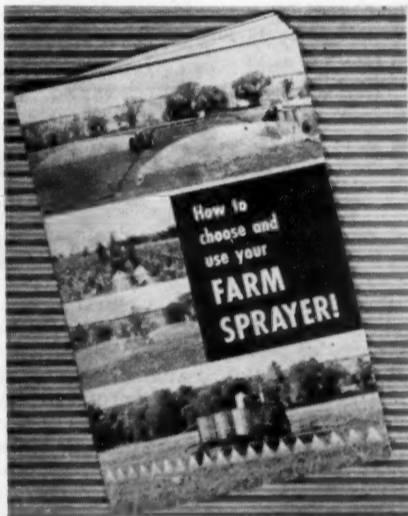


Plenty," a pesticide industry fact book, has been announced by the National Agricultural Chemicals Assn. The book tells the story of agricultural chemicals and how they are used. The 64-page illustrated booklet reviews progress which has been made in pesticides and reports on future advances which are expected in the industry. For copies, check No.

6846 on the coupon and mail to this publication.

## No. 6845—Booklet on Spraying

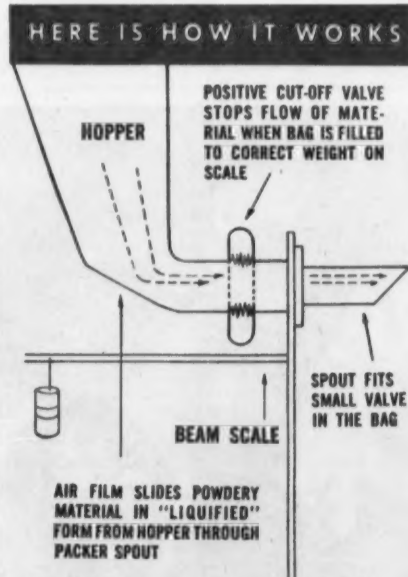
"How to Choose and Use Your Farm Sprayer" is the title of a booklet being offered by the Hanson Equipment Co. The 16-page booklet gives tips on selecting the right kind of sprayer and how to use it efficiently. It includes information on the proper calibration of equipment plus



weed and insect recognition charts with suggested chemicals for their control. For copies, check No. 6845 on the coupon and mail to this publication.

## No. 6843—Valve Bag Packer

The fluidizing air principle of conveying powdery and free flowing materials is employed in the new Air-Pac valve packer introduced by the



E. D. Coddington Manufacturing Co. The unit fills standard valve bags from 20 to 100 lb. No moving parts are used, the company says, and no motor is required. The packer is ready to operate when connected with a 110 volt AC service and to stand-

ard low capacity air compressor system. A built-in scale provides weight control and shuts off the packer automatically when desired weight is reached. Check No. 6843 on the coupon and mail for details.

## Also Available

The following items have appeared in the What's New section of recent issues of CropLife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

## No. 6841—Booklet on Tin Fungicide

An organic tin fungicide, recently developed by a German chemical firm for treating leaf-spot and blight on potatoes, is discussed in "Tin and Its Uses," published by the Tin Research Institute, Inc. The article shows illustrations of crops which have been left untreated contrasted with crops that have been treated with the tin fungicide. Copies can be obtained by checking No. 6841 on the coupon and mailing.

## No. 6824—New Products Catalog

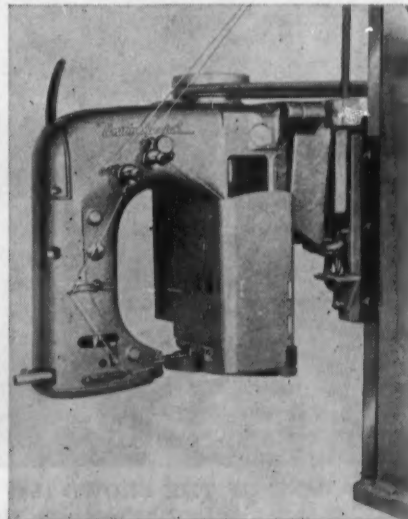
Publication of the latest edition of its products catalog describing properties and uses of 375 industrial, pharmaceutical and agricultural chemicals, is announced by the Dow Chemical Co. The 1958-59 issue is the fourth annual booklet issued by Dow. Containing a new cover and new features, the catalog is a ready reference for Dow's broad range of chemicals. This catalog may be obtained without cost by checking No. 6824 on the coupon and mailing it.

## No. 6835—Instrument Data Sheet

Techniques for making pH measurements in soils, emulsions, suspensions and oils are covered in a data sheet issued by the applications laboratories of Beckman/Scientific and Process Instruments Division. Proper care of pH electrodes is discussed and step-by-step procedures are detailed for pH measurements in dry, porous samples, oils and other water insoluble liquids. For details, check No. 6835 on the coupon and mail to this publication.

## No. 7239—High-Speed Sewing Head

Union Special Machine Co. announces a new high-speed sewing head, Style 53600 H, for closing medium and heavy weight bags made of burlap and single ply or multiwall paper. The machine incorporates a 25% speed increase over the previous machine used in that range, the company says. The unit has automatic lubrication and is adaptable for mounting on existing bag machine



Send me information on the items marked:

- |   |   |
|---|---|
| <input type="checkbox"/> No. 6824—New Products Catalog            | <input type="checkbox"/> No. 6840—Aerial Equipment Brochure |
| <input type="checkbox"/> No. 6834—Gibberellin                     | <input type="checkbox"/> No. 6841—Booklet on Tin Fungicide  |
| <input type="checkbox"/> No. 6835—Instrument Data Sheet           | <input type="checkbox"/> No. 6842—Rotary Filler             |
| <input type="checkbox"/> No. 6836—Anionic Surfactant Booklet      | <input type="checkbox"/> No. 6843—Valve Bag Packer          |
| <input type="checkbox"/> No. 6837—Bulletin on Pumps               | <input type="checkbox"/> No. 6844—Proportioning Pump        |
| <input type="checkbox"/> No. 6838—Agricultural Chemicals Bulletin | <input type="checkbox"/> No. 6845—Booklet on Spraying       |
| <input type="checkbox"/> No. 6839—Ammonium Nitrate Fertilizer     | <input type="checkbox"/> No. 6846—Pesticide Fact Book       |
|   | <input type="checkbox"/> No. 7236—Bag Handle                |
|   | <input type="checkbox"/> No. 7239—High Speed Sewing Head    |
|   | <input type="checkbox"/> No. 7258—Weigher, Filler Bulletin  |

(PLEASE PRINT OR TYPE)

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS  
PERMIT No. 2  
(Sec. 34.9,  
P. L. & R.)  
MINNEAPOLIS,  
MINN.

BUSINESS REPLY ENVELOPE

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept.

Minneapolis 40, Minn.

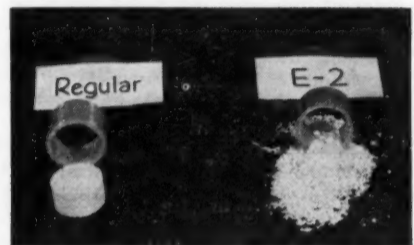
frames and columns. The machine can handle up to five-ply multiwall gusset type paper, the company says. Check No. 7239 on the coupon and mail for details.

### No. 7258—Weigher, Filler Bulletin

The Holm Model GF weighing and filling machine for packaging of free-flowing materials is described in a bulletin offered by the Richardson Scale Co., Clifton, N.J. Bulletin H-2 tells how the machine operates, lists specifications and describes component parts. A photograph of the unit is included and labeled for working parts. Check No. 7258 on the coupon and mail to this publication for copies.

### No. 6839—Ammonium Nitrate Fertilizer

An ammonium nitrate fertilizer, which the Monsanto Chemical Co. says will not cake during storage and



is dust free, has been announced by the firm's inorganic chemicals division. Called "Lion E-2," the product can be stored indefinitely, the company says, and its higher density takes 20% less storage space. The product also remains free-flowing under unfavorable conditions, the company claims, which makes it easier and cleaner to handle. The photo above shows the product being subjected to a pressure test. Check No. 6839 and mail for details.

### No. 6836—Anionic Surfactant Booklet

Antara Chemicals Sales Division of General Aniline & Film Corp. has published a 16-page booklet on the properties and uses of its Igepon series of anionic surfactants. The brochure describes the chemical derivation of Igepon and gives the chemical formula, functional properties and uses of each of the brands. For copies, check No. 6836 on the coupon and mail to this publication.

### No. 7236—Bag Handle

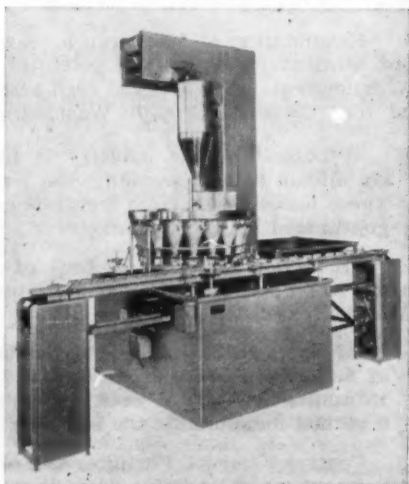
The Multiwall department of Hudson Pulp & Paper Corp. announces a double side handle has been added to Multiwall bags. The handles support weights of 50 lb. and more, the



company says. With the new handles the bag can be carried like a suitcase. It also makes for easy pouring, the company added. For more information, check No. 7236 and mail to this publication.

### No. 6842—Rotary Filler

Frazier & Son announce the Model "P" High Speed Rotary Whiz-Packer, a fully automatic volumetric filling machine. The machine is designed to



handle a variety of dry products, ranging from powders to granular and bulk materials. The unit is custom built to plant specifications and is powered by two 1/4 h.p. motors. For more complete information,

check No. 6842 on the coupon and mail to this publication.

### No. 6838—Agricultural Chemicals Bulletin

A bulletin entitled "Chemicals for Agriculture" has been published by Roberts Chemicals, Inc. The bulletin describes eight products currently offered by the company for the agricultural trade. Included in the list of products are fungicides, herbicides and insecticides. For copies of the bulletin, check No. 6838 on the coupon and drop in the mail box.

### No. 6837—Bulletin on Pumps

A bulletin covering pumps for fertilizer and temperature controlled liquids has been issued by the Dean Hill Pump Co. The publication discusses results of tests made with the pumps and contains data on performance. Illustrations and diagrams of the pumps are included. For further information, check No. 6837 on the coupon and mail.

### No. 6840—Aerial Equipment Brochure

Revised brochures describing Transland Aircraft's line of dust and

liquid spray aerial applying equipment are now available. Described in the publication are hoppers, agitator gates, spreaders, plumbing, pumps, dump and pressure regulator valves, trailing edge booms and nozzles, pressure gauges, pilot controls and spray kits. Also included is a current Transland price list. For copies, check No. 6840 on the coupon and mail to Croplife.

### No. 6834—Gibberellin Publications

Two publications on gibberellin have been published by Merck & Co., Inc. One is a reprint of an article, "The Effects of Gibberellin on Economic Crops," by S. H. Wittwer and M. J. Bukovac of Michigan State University. The other is a booklet entitled "What You Can Tell Farmers About 'Bibrel.'" It contains information on the commercial use of gibberellin. For details, check No. 6834 on the coupon and mail to this publication.

#### CORN CHAMPION

NEWARK, DEL.—John G. Tarburton is the corn growing champion of Delaware for 1958. His winning yield of 175.86 bu. an acre topped the old record yield of 174.5 bu. set in 1956.

## Books on Soils and Soil Management

### SOILS AND FERTILIZERS—Fourth Edition

Firman E. Bear

Covers in detail: soil chemicals, important soil elements such as nitrogen, phosphorus, calcium; yield prospects of crop plants; moisture control, soil management; mechanical operations; soil conservation; organic matter maintenance. New facts, accurate figures. 66 illustrations, 420 pages ..... \$6.00

### SOIL FERTILITY (1955)

C. E. Millar, Professor Emeritus of Soil Science, Michigan State College

A fundamental treatment of the principles of fertility in the soil, with major emphasis on the plant itself. Relevant aspects of soil chemistry, soil physics, soil microbiology and plant physiology from viewpoint of their influence on plant growth. Each major plant food element and the more important micro-nutrients fully treated with respect to supply in the soil, sources and amounts of additions, losses from the soil, functions in plant growth and plant symptoms of deficiency. Covers all sections, with considerable space to saline soils and soils of southern latitudes ..... \$6.75

### CHEMISTRY OF THE SOIL (1955)

Firman E. Bear

Presents a comprehensive picture of the chemical aspects of soils in relation to their development, present constitution and the uses to which they are put. Covers: chemical composition, soil colloids, organic matter relationships, oxidation-reduction phenomena, acid, alkaline and saline soils, plant nutrition, nutrient fixation, trace element chemistry, root and soil relationships. Scientists engaged in soil research will find useful data directly applicable to their investigations. Food chemists, manufacturers and those manufacturing liming materials, fertilizers, soil conditioners, surfactants, wetting agents, insecticides, fungicides and other agricultural chemicals will gain new ideas for future product research and development. 384 pages ..... \$8.75

### SOIL PHYSICS—Third Edition (1956)

Dr. L. D. Baver, Director Experiment Station, Hawaiian Sugar Planters Association

This represents a considerable revision of the earlier versions and incorporates many ideas communicated to the author by soil scientists all over the world. Two new chapters on the principles of soil irrigation and drainage, discussion on soil puddability, effect of chemical soil conditions on soil structure, and recent contributions of the diffusion process in soil aeration, and information on hydraulic conductivity, soil moisture stress and plant growth, the importance of compaction on soil tillage, and wind erosion processes. 489 pages ..... \$7.75

### SOILS AND SOIL MANAGEMENT

A. F. Gustafson

A complete study of soils; physical properties, soil, organic matter, relation of water, control of water, tillage, erosion, acidity and its control by liming, management of alkali soils, nitrogen and its importance to the farmer, production, conservation and utilization of farm manures, production and utilization of green manure crops; fertilizer materials and their effects on soils; crop rotations; fertilization and long-term maintenance of productivity of mineral soils. Published 1941. 424 pages, illustrated ..... \$6.50

### SOIL SCIENCE SIMPLIFIED

Helmut Kohnke

A concise textbook dealing with basic concepts of soils. Much useful information for students in agriculture, farmers, fertilizer salesmen, etc. 68 pages, paper bound ..... \$1.00

### IRRIGATED SOILS: Their Fertility and Management—New 1954—Second Edition

D. W. Thorne and H. B. Peterson, Department of Agronomy, Utah State Agricultural College. Dr. Thorne is also Chief of Soils and Fertilizer Research Branch, Tennessee Valley Authority

An outstanding text dealing with the problems of irrigated regions. In addition to the chapters dealing with irrigation, the salt problem, reclamation of saline and alkali soils, there are chapters on maintaining organic matter in soil, minerals and plant growth, fertilizer elements and fertilizer materials, using fertilizers, soil management for general field crops, for fruit, vegetable and specialty crops... \$7.00

### THE RESPONSE OF CROPS AND SOILS TO FERTILIZERS AND MANURES (1954)

W. B. Andrews

A new book, with special reference to Anhydrous Ammonia and other sources of nitrogen in liquid form. Deals also with legumes as a source of soil nitrogen, and the uncertainty of green manures; the response of soil to phosphorus, potash and soda; the effect of fertilizers on yield and feeding value of hay and pasture crops. 468 pages, 19 chapters, 89 illustrations ..... \$6.00

### CHEMICALS, HUMUS AND THE SOIL

Donald P. Hopkins

The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers. .... \$8.50

## Order From Croplife

Reader Service Department  
P.O. Box 67  
Minneapolis 40, Minn.

(enclose remittance)

## EVERYONE WELCOME TO PANCAKE DAY, DEC. 6, 1958 - 10 a.m. to 9 p.m.

ALL YOU CAN EAT

### Free Pancakes, Sausages, Coffee, Cookies and Donuts.

WE KNOW YOU ARE BUSY, BUT COME TO OLSON'S FOR SOME OF THOSE DELICIOUS PANCAKES AND SAUSAGES. BRING THE ENTIRE FAMILY. THERE WILL BE TREATS FOR THE KIDS, TOO!

Register For Free Door Prizes!

#### Smith-Douglass Fertilizers



THERE WILL BE A SMITH-DOUGLASS REPRESENTATIVE HERE. DISCUSS YOUR PROBLEMS AND SOIL REQUIREMENTS WITH HIM.

WE ARE NOW TAKING ORDERS FOR SPRING DELIVERY. YOU CAN SAVE MONEY ON NEXT YEAR'S FERTILIZER BY STORING IT ON YOUR FARM THIS WINTER.

#### K-137 Kimberchiks

WHAT CAN YOU EXPECT OF K-137 KIMBERCHIK PRODUCTION? EGG SIZE? LIVABILITY? INCOME? EGG QUALITY?

Q. What can I expect in the way of income from the K-137 Kimberchiks?

A. Possibly the best way to answer that question is to say that this strain-cross Leghorns netted \$3.97 income over feed cost in the five random sample tests in which it was entered in 1956-57.

Q. How many eggs did the K-137 average?

A. In the five random sample tests the K-137 entries averaged 244.6 eggs per pullet housed.

Q. How about livability?

### MANSFIELD STORE

Groceries — Feeds — Poultry — Eggs — Fertilizer — Locker Service — Hardware  
KIESTER PHONE AX 4-3238 DON OLSON, Prop. CONGER PHONE CO 4-5386

SHOWN ABOVE are portions of a full-page ad which is run by the Olsons prior to their annual "Pancake Day." The event draws nearly 1,000 visitors to the Mansfield store.

### PANCAKE DAY

(Continued from page 9)

about 10 years ago and its popularity has increased each year since. Last year the store fed more than 800 persons, and the recent session appeared to be even larger, Mr. Olson said. "The people around here love this event," he commented. "We have many friends in the community and they really look forward to this day when they can come down here and have a good time and meet many of their friends. I think they also like our pancakes and other treats pretty well," he added.

Actually, Mr. Olson's words were an understatement, judging from the enthusiasm shown by scores of the visitors. Very few families merely came in, ate, and left immediately. The pancake day is actually a long one and most of the visiting family groups stay quite awhile, knowing if they leave early—they might miss seeing friends whom they may not have contacted for some time. Hours of the day run from 10 a.m. to 9

p.m., and according to Mr. Olson, "There's never a dull moment."

Fairly well concealed under the obvious activity of the pancake-serving room is a tremendous merchandising idea which results in extra sales throughout the store. The families who come for the social time and to get some free food, also come well prepared to make purchases which add up to a neat total by the end of the strenuous day.

The Olsons, weary but happy when the day is over, don't have to worry about going out in the cold to reach their home. As a matter of fact, they literally live with their business with their residence attached to the store. The enterprise is a family affair with not only Mr. and Mrs. Olson participating in the store's operation, but also their 17-year-old son, Curtis and his younger sister, Nancy. Curtis, by the way, expects to join his father on a full-time basis upon his graduation from college where he plans to get a degree in business administration.

The store's location is at a country crossroad some 18 miles southwest of Albert Lea, Minn. and 7 miles southwest of Alden, not far from the Iowa border.

Invitations numbering about 1,000 are mailed to farm families throughout the store's marketing area.

#### NORTH CAROLINA SALES

RALEIGH, N.C. — Fertilizer sales during October in North Carolina amounted to 78,008 tons or 7,377 tons more than October of last year. For the fiscal year to date (July through October) sales are running more than 24,000 tons ahead of 1957.

#### ARKANSAS FERTILIZER SALES

LITTLE ROCK, ARK. — Fertilizer sales in Arkansas during October amounted to approximately 12,170 tons, comparable to 9,867 tons for October, 1957, reported the Arkansas State Plant Board. Most popular material was ammonium nitrate, with 2,177 tons being sold. Most popular mixture was 10-20-10 with 2,419 tons being sold.



**NEW SALESMAN**—A little red giant, the "Nitro-Gent," has joined the sales promotion staff of the Sohio Chemical Co. in Lima, Ohio. This artist's creation will serve as Sohio's spokesman to give tips on technical matters in ads and booklets from the Sohio customers' service labs. "Nitro-Gent's" first job is to adorn a colorful special privileges award plaque being presented to Sohio customers.

## What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Examination of 1959 crop acreage probabilities reveals a solid basis for optimism over the market potential for fertilizer and pesticidal chemicals with emphasis on cotton and corn acreage increases over recent years, reported John Cipperly, Croplife Washington correspondent.

"Losses" to the industry in fertilizer overages range from five to six million dollars annually, the National Plant Food Institute reported. These losses result from fertilizer containing plant food in excess of that guaranteed by the manufacturer.

Production of 15 to 20 tons of grass-legume growth an acre is being achieved on permanent Missouri pastures, said Marshall Christy, University of Missouri extension soils specialist.

Montrose Mexicana, S.A., has started operation of a new DDT plant at Salamanca, state of Guanajuato, Mexico. The plant has a capacity of 15 million lb. DDT a year, as against current Mexican requirements of 9 million lb. annually, the company said.

Central Farmers Fertilizer Co. and National Potash Co. have signed an agreement which calls for acquisition by Central Farmers of a stock interest in National and the production by National of potash materials for distribution by Central Farmers, according to a joint announcement by Richard C. Wells, president of National, and Jos. J. Lanter, president of Central Farmers.

A talk on salesmanship, the showing of a time-lapse sound-and-color film, reports on progress made within the organization during the past year and the election of eight new members to its board of directors featured the opening day of the Agricultural Ammonia Institute's eighth annual meeting in Chicago, Dec. 3.

Montrose Chemical Company of California, jointly owned by Stauffer Chemical Co. and Montrose Chemical Company of Newark, has been awarded a contract by General Services Administration to supply more than 11,000,000 lb. of DDT for the worldwide anti-malaria program of the International Cooperation Administration. Dollar value of the award to Montrose is approximately \$2,800,000.

The Fairfield Chemical Division, Food Machinery and Chemical Corp., has announced the acquisition of Powco inventories from the Olin Mathieson Chemical Corp., together with the Powco trademark.

Producers in the 26-state commercial corn-producing area voting in a referendum Nov. 25, favored by 71.1% a new program calling for the elimination of corn acreage allotments and for a new method of setting support prices for the 1959 and succeeding crops.

The typical hourly cost of dusting or spraying crops from a 150-h.p., two-seated plane is estimated to be \$28.88, if the applicator uses his plane for 200 hours of flying time annually, and \$24.14 if his flying time is 400 hours annually, a U.S. Department of Agriculture economist reported.

The problems involved in introducing new agricultural chemical products on the market received the attention of 350 chemical marketing and production specialists at a joint meeting of the Commercial Chemical Development Assn. and the National Agricultural Chemicals Assn. in Baltimore, Nov. 20-21.

Pesticide dealers and salesmen had some earnest advice from a Food and Drug Administration official at the annual Rutgers University Pesticide Dealers' Conference in New Brunswick, N.J., on Nov. 20. The official admonished the "few pesticide salesmen or distributors more interested in peddling merchandise than in rendering a customer an honest service."

The announcement of the immediate construction of a 60-ton-per-day anhydrous ammonia plant in Arizona was made by C. P. Gould, president of Southwestern Agrochemical Corp., and Owen Cooper, chairman of the board of First Mississippi Corp.

Vertical integration in agriculture will continue to expand in the years ahead, Dr. Tyrus R. Timm, head of the department of agricultural economics and sociology at Texas A&M college, declared in Omaha recently. He spoke at the American Bankers Assn.'s seventh agricultural credit conference.

A presentation on how farmers accept new ideas, a panel discussion of equipment, inventory control and standardization as pathways to profits and a look at the changing economic society as a challenge to today's business leadership were the program highlights at a lively annual meeting of the National Fertilizer Solutions Assn. held in Cincinnati.

A full three-day convention featuring representatives of the fertilizer industry, the universities and the entertainment industries comprised the 35th annual convention of the California Fertilizer Assn. in Los Angeles. Some 500 attended, with many coming from distant portions of the country.

Ray Hubble, Medford, Ore., was elected president at the seventh annual Oregon State Weed Conference in La Grande, Ore. More than 250 Oregon farmers, ranchers, weed control specialists and chemical company representatives from all over the U.S. discussed weed control problems and latest scientific developments.

The U.S. Department of Agriculture has announced changes in the barter program through which surplus Commodity Credit Corp.-owned farm products are exchanged for strategic and other materials produced abroad. The changes will be effective immediately with respect to new barter offers.

"There are no short-cuts, push-buttons or ready-to-wear solutions" to the problems of the agricultural chemical industry, Frank S. Washburn, general manager of the Agricultural Division, American Cyanamid Co., declared at the closing session of the 25th anniversary meeting of the National Agricultural Chemicals Assn. in Savannah, Ga.



Doing Business With

# Oscar & Pat



Lanky Paul Fletcher came ambling into the Schoenfeld & McGillicuddy Farm Supply Store early one morning. He approached the railed-in enclosure where Oscar sat, his ramrod back very forbidding, almost as much so as the big green bulldog paper clip container, the 8 ball on the desk, and the sign which hung on the wall, "What! You Here Again? Here's Another Half-Hour Shot—"

"Oscar," grinned Fletcher, "I hear you have to spray your money—that you have hoarded it so long a silver mold is eatin' it away. Is that true?"

Oscar turned in his swivel chair, saw Fletcher, who was one of the firm's best cash customers, and he remarked, "Ach, there is nothing wrong with my money. I got it. Lots of folks owe it."

"Well, that's for sure," said Fletcher. "Ain't it a fright how money has developed feet and just walks away from a guy—right outta his pockets? Oscar," he lowered his voice, "I'm gettin' a little hard up. Could you lend me \$2,000 for about six months?"

The color faded from Oscar's face and his eyes widened. He swallowed. So Fletcher was hard up too. Just like all the rest. "Ach, I neffer lend money to anyone," he said, "only banks and corporations like General Motors. Their stock is goot."

The farmer roared. "Boy, you sure are cautious, Oscar. Wish I could be that way. Don't worry. I don't want a loan. I was jest fishin' for fun. I want to see your partner."

Oscar looked relieved. "He ain't in," he said. "He neffer shows up here until late effery morning. How would you like a hired man like that? Ach, your cows would neffer get milked."

"I suppose not," Fletcher said. "But Pat ain't working for me as a hired man, so I don't have to worry about his hours. But he's allus comin' up with ideas. That means he works his head."

"He works it too much—with crazy ideas, that's what," growled Oscar. "He shouldt shtick to one thing at a time—like collections, for instance."

Fletcher bristled. "You ain't talkin' about my bill, are yuh? I'm telling you I'm all paid up. I'm careful about those things."

"I know you are paid up," Oscar said. "I mean others that don't pay."

"Well, don't rile me," said Fletcher sharply. "I'm kinda touchy on the credit business. I don't beat nobody. I don't wanna be listed as a dead beat by anybody, not even you. I was just wonderin' if Pat'd be back soon."

Oscar shrugged, anxious to get back to his work.

"I'm telling you, Oscar," continued Fletcher, "that's a swell idea Pat's got, with those records."

Oscar looked puzzled. "Records?"

Fletcher laughed. "Yuh mean you fellers don't keep up on what the other is doin'? Man, what a partnership. Well, Pat's got all our soil test records, you know. He's been pushin' that. And he knows what crops we raised last year. And he knows what crops we figger on raising the coming year."

Oscar seemed uninterested.

"Well," went on Fletcher, "Pat comes around with a tape recorder and interviews us farmers about our soils and fertilizer, and he also asks the women what their best recipes

is. He even gets 'em to talk them recipes on the tape recorder. Even asked Grandma what her favorite recipe was. Ma's was kaffee kuchen and Grandma's was pfeffernuesse."

"Ach," burst forth Oscar. "That is chust like Pat. Always foolink aroundt with schtuff that don't sell fertilizer."

"To heck it don't, Oscar. Pat takes that stuff off the tape recorder, puts some of it on a record, then talks into the record himself about my soil tests and what I oughta fertilize with. And then he puts on the record, too, that stuff from the tape about Ma's recipe and Grandma. Then he gives us one of them records."

Oscar slapped his hand to his head. "Ach, we can expect a big bill for those records and them tapes. So that is why Pat has been going out so much lately and forgetting collections. He's crazy."

"Yeah, crazy like a fox," put in Fletcher. "Them records make a feller think about his crops and fertilizer, Oscar. Every farmer's got a record player nowdays. They sure ain't gonna throw Pat's fertilizer record away before they play it. And when you play it you kinda like having something around that talks about what you're doing on the farm. You wanna keep it. And the women do, too. And you drag it out and play it fer relatives, for the minister and it's also darn good to drive away door to door salesmen. Just invite them to listen and if they stick it out start playin' it over again. By that time they're so nervous about losin' time they just bolt away and forget to try to sell yuh somethin'."

"Ach," cried Oscar his eyes flashing fire. "We are in business to sell fertilizer, not to give records away to farmers. Such monkeyshines."

"Well, I'm telling yuh, Oscar,

this record deal is gonna sell fertilizer for Pat. Every time we hear it we're gonna think about orderin' enough fertilizer for spring."

"But them that order, kin they pay?" burst forth Oscar. "We go bills to collect, two inches thick, that Irisher. And he goes on sellin'."

"Yeah," said Fletcher quizzically, "from the size of that pot belly of yours business is awfully slack. You're not gettin' any more to get every day than about five squares."

"I work hardt," Oscar exclaimed eagerly. "That's why we manage to get paidt on time. But it's a close squeak lots of weeks."

Fletcher shook his head. "Well, I'd better mosey on," he said. "If I hang around here any longer, I'll start feeling down in the mouth on the world like you. Just tell Pat when he comes in I want four more of them records he made for me."

"Four!" groaned Oscar.

"Yeah, four, and I want 'em free! They don't cost you guys much. My wife wants to send 'em to four of our uppity relatives who think we don't amount to much. We wanna show 'em that we know how to farm properly, and that Ma and Grandma got top notch recipes. Don't forget now—or I'll switch my fertilizer business, if I have to."

## Books on Fertilizers And Their Use

### FOREST FERTILIZATION

Donald P. White and Albert L. Leaf

A bibliography, with abstracts, on the use of fertilizers and soil amendments in forestry. Useful to those interested in prospects of a plant food market in forest areas, the book resulted from a special two-year study at the college of forestry, Syracuse University, Syracuse, N.Y., under sponsorship of the Nitrogen Division of Allied Chemical & Dye Corp. The book contains 300 pages, 700 references, with abstracts, and covers the period from 1865 through 1956. Includes the use of fertilizers in forest management ..... \$3.00

### SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound ..... \$7.75

### PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarp, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 267 pages ..... \$6.50

### THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including ..... \$3.00

### AUXINS AND PLANT GROWTH

A. Carl Leopold

A 364-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarp, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press..... \$5.00

### ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III—Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application ..... \$4.50

### HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color ..... \$4.50

### USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound ..... \$3.50

### COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages ..... \$8.50

### APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated ..... \$3.00

### MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data ..... \$2.50

## Order From Croplife

Reader Service Department  
P.O. Box 67  
Minneapolis 40, Minn.

(enclose remittance)

## BIG COMPANIES

(Continued from page 9)

ized National Council for Small Business Management Development, says, "Better management is the small business owner's primary need." Or, as one large company executive put it, "Selling can raise volume, but it takes management to increase profits."

## Practical Education

Do you need to refresh or broaden your own knowledge? Big companies are finding a real opportunity to give the small business manager a chance to learn. They let him pick the subjects he wants, and let him study the way he likes. A revolution has come in the type of reading material which they offer. Business reading now can be fast and exciting.

Also, under the guidance of the customer relations staffs of large concerns, small business managers are organizing two-hour management clinics to discuss problems. From these grow classes or institutes which take up the subjects a small marketer could most profitably study. In the oil industry, for instance, small jobbers in 26 states have conducted 65 of these institutes.

Clinics and institutes, in turn, lead into small business management courses. Under the sponsorship of the Small Business Administration alone, 134 universities, colleges, and high schools (Distributive Education) have conducted over 320 of these courses. More than 10,500 owners have attended. Progressive small business owners are among those who sign up first. Their example is being followed. For instance, one small business operator was asked why he enrolled. He said, "I had to—my two smartest competitors are here."

## Assistance in Teaching Employees

Do your employees need more

know-how? Small business specialists in large firms suggest to trade associations that educational programs would be a useful service to members. They address conventions to help introduce such programs. They serve as speakers and discussion chairmen. They furnish up-to-date teaching materials (which do not bear the company's name) such as books and graphics.

The management development programs show the small business owner the value of giving his employees a chance to learn. They show also why it is profitable to seek young employees who prefer and prepare for sales and service careers.

## Research for Better Merchandising

Do you need help in finding new markets? Customer relations programs by large companies have already produced results. For example, in some instances they have shown a small business manager how to capture waiting markets.

Along this line, the market research department of a large mid-western newspaper carried advertisements to arouse people's desire to modernize homes. Considerable public interest was generated, but the building-supply dealers were not prepared to take advantage of the opportunity. The newspaper then studied thousands of customers and the methods of dozens of lumber yards. They found that the yards talked specifications and price while people wanted appearance, convenience, and comfort. So the paper went on to show lumber dealers how to display and merchandise their wares.

Today, one of those lumber dealers has this to say: "We've relocated our shop and we now appeal to the consumer. We have facilities for the whole family. We are a department store of building materials. And we have increased our business tenfold."

## SHOP TALK

## OVER THE COUNTER

By Emmet J. Hoffman  
Croplife Marketing Editor

Dealers and growers alike were given some advice about safe uses of pesticides from an official of the Food & Drug Administration at the Rutgers University conference for pesticide dealers and fieldmen last month.

For growers the admonition was to use pesticides according to the label directions—on the crops specified, in the amounts specified, and at the times specified.

For dealers the advice was to remember that pesticides are important and indispensable for certain crops, in specified quantities at appropriate times, but deviating from label directions in advising growers may endanger both human health and livestock.

The speaker was Robert C. Stanfill, chief of the Philadelphia district, FDA, who outlined the administration's responsibilities under the Miller Amendment. He said FDA is not anxious to bring seizure actions against shipments of foods, or injunctions against shippers, but much prefers voluntary compliance and cooperation.

Speaking of growers Mr. Stanfill said they are given "valuable assistance and guidance by the agricultural extension service."

"Spraying and dusting schedules are prepared and distributed for each crop in each county, and it is not likely that anyone in the extension service would do a grower the disservice of recommending a pesticide not in accordance with the tolerance-making regulations and the approved directions for use.

"Unfortunately, some growers do not have the proper respect for these carefully devised directions and recommendations. A few let pesticides drift from one field to another or in desperation apply them to a crop too near harvest time, or to a crop for which the pesticide is not intended.

"Such rugged individualism is as ill-advised as ignoring the stop signals and bell ringing at a railroad crossing."

Mr. Stanfill decried the "few pesticide salesmen or distributors more interested in peddling merchandise than in rendering a customer an honest service."

Dr. Stacy B. Randle, state chemist at the Rutgers experiment station, emphasized the necessity of proper labeling and the obligation of a dealer to be sure his customers know exactly how to use any product he sells.

## SUMMARY

To an increasing extent large companies are realizing that it is good business to assist their small distributors with recordkeeping, training and similar management problems. Many large suppliers now provide a wide range of management services free or at a nominal cost. This aid seeks to stimulate more small marketers to turn to their big suppliers for help of this kind. Further, by describing services offered to small concerns by some large companies, it seeks to encourage other large businesses to undertake similar programs, or to expand their present ones. This article is presented through the cooperation of the Small Business Administration.

## Working Out Credit Problems

Do you need help on installment credit? Small retailers like cash sales, of course. But many of them display and demonstrate merchandise, talk up the advantages of owning it, and then ruefully watch the customer go where he can buy "on time." All too commonly, dealers lack the information needed to set up an installment-payment policy.

The marketing research division of a large, photographic-supply producer went to work on that problem. They studied the amount of sales which a typical camera store could capture if it allowed customers to buy on time, and determined what the repeat purchases of films and accessories would total. Next they determined how much extra capital a typical store would require to extend credit, and what its earnings would be. Then they presented a complete program to the retailers.

A small camera shop owner in California tells how he suffered without such knowledge and how he has prospered since gaining it. In his words: "Sales jumped one-third the first year, and 25% the second. I have more cash sales, too."

## Wholesale-Retail Cooperation

Do you need help in store management? Wholesaling in the television-and-radio parts field means one small business sells to other small businesses. The retailers are technicians. One wholesaler said: "They are up on electrical circuits, but low on profits."

One of the biggest manufacturers in the field put a team to work on the problem. They located the key need. Then they worked out a way in which retail management could be taught by wholesalers. In the past, wholesalers had hesitated for fear that retailers might resent interference. But when the big company showed the proper way, they began to provide such training. Now many of these wholesalers offer management instruction—along with the merchandise.

The president of a typical wholesale house in this field in West Virginia tells of the results: "In one year, our dealers became aware of profits. They saw the need to improve their methods. Now, they are paying our bills because they are collecting their bills."

## New Recordkeeping Service

Do you need recordkeeping help? One of the country's biggest banks is proud to call itself "the little fellow's bank." With hundreds of branches, it is a large business well aware of the problems of small businesses.

Studies over six years revealed a need to relieve small business owners of the "torture" of recordkeeping. As a result, the bank made available a wide range of electronic data processing for small business concerns. For a service charge, a manager is able to have the bank take over many of the details of bookkeeping, payroll and tax accounting and inventory control. Thus, scores of small business operators can make better man-

agement decisions because they have accurate, up-to-the-minute information.

## Obtaining Equity Capital

Are you trying to find and attract additional equity capital? A growing small distributing business needs permanent money. It needs it at the start. It needs it in every inch of growth. Automobile dealers are examples of this condition. They need permanent, or equity, capital which will share in profits when things go well, and be patient when there is no profit.

In building up its dealers, one of the major automotive producers found no lack of men able to sell and service. But such men seldom had money, and they rarely knew where or how to acquire growth capital. Company studies resulted in a new type of financing plan. It meets all of the needs stated above, and others. When success is assured, the supplier of venture capital is willing to sell back his stock and step out. The dealer then owns it all.

## List of Assisting Services

The list of services being offered to small business by big companies is long. Naturally, no one large concern offers all the services noted below. Nevertheless, the assistance resulting from specialized customer relations programs should encourage small marketers in every line. Compare these services with what your suppliers offer.

## CONSUMER SERVICES

- Study local market potentials.
- Study population trends, business and employment conditions.
- Study consumer buying intentions.
- Study consumer buying patterns.
- Study consumer buying motives.
- Find prospects—refer them to dealer.
- Maintain lists of prospects.
- Furnish consumer services, recipes, directions, maps, travel information.
- Supply sales literature and souvenirs.
- Pre-test advertising and promotion.
- Provide local and national advertising.
- Assist in putting on grand openings.
- Conduct public contests.
- Conduct sales campaigns.
- Assist consumers to use products more efficiently.
- Guarantee products and services.
- Handle consumer complaints.

## PLANNING SERVICES

- Suggest marketing quotas.
  - Recommend marketing policies and plans.
  - Advise on competitors' plans.
  - Report business sales outlook by products.
  - Provide industry sales data.
  - Analyze related industries in the territory.
  - Stimulate inquiries for information.
  - Study retailers' attitude toward suppliers.
  - Investigate resale methods and suggest new techniques.
  - Establish distributor advisory committees.
  - Encourage long-range planning.
  - Furnish 5- to 10-year market forecasts.
  - Try to level sales curves.
- RECORD-KEEPING SERVICES**
- Suggest accounting systems.
  - Supply accounting forms.

Instruct in accounting methods.  
Keep dealer records and accounts.  
Help them to take cash discounts.  
Set-up standards of good performance.  
Compile typical ratios of assets and liabilities.  
Furnish auditing service.  
Take inventories, and make suggestions on what and when to buy.

**FINANCIAL SERVICES**

Extend credit.  
Help install time-payment plans.  
Consign merchandise.  
Endorse notes.  
Lend money.  
Teach management of money.  
Assist dealer financing—floor plans.  
Finance dealer receivables.  
Suggest accounts receivable financing and investments.  
Advise on credit and collection.  
Provide credit and collection service.  
Advise on insurance and taxes.  
Analyze financial statements.  
Find investors.  
Buy stock giving owner option to re-purchase it later.  
Provide consumer financing through dealer.  
Organize dealer councils.  
Help in financing new establishments.

**RECRUITING SERVICES**

Help forecast dealers' manpower needs.  
Furnish job descriptions.  
Attract students to dealers through Distributive Education.  
Address high school assemblies.  
Participate in high school and college "Career Days."  
Provide scholarships.  
Conduct school for dealers' sons.

**TRAINING SERVICES**

Suggest sources of employees.  
Screen new employees for dealers.  
Train new employees for dealers.  
Provide on-the-job training.  
Provide dealer reference manuals and other technical literature.  
Provide training films, manuals, conferences and courses, for sales and service employees.  
Teach installation and repair men.  
Provide factory, home office, and traveling schools.  
Furnish correspondence courses.  
Instruct in safety procedures.

**MANAGERS' SERVICES**

Provide management manuals for owners.  
Advise on locations.  
Publish management information.  
Advise on building and layout.  
Establish area business libraries.  
Establish reference library service.  
Assist trade associations to conduct management institutes.  
Cultivate professional recommendations.  
Assist trade associations to provide courses for employees.  
Provide group insurance—life, health, pension plan.  
Cooperate and assist on medical matters.  
Publish comparative wage scales.

**OPERATING SERVICES**

Plan inventory control systems.  
Publish catalogues and parts price lists.  
Study wholesaler and retailer warehouse needs.  
Lend safety equipment.  
Provide more warehouses.  
Allow return of containers.  
Provide for return of unsalable merchandise.  
Help dispose of obsolete stock.  
Simplify sales and service operations.  
Show how delivery costs can be reduced.  
Suggest how to reduce freight costs.  
Inspect and maintain equipment.  
Instruct employees in how to control waste.  
Provide nationwide repair services.  
Provide factory trouble-shooter services.  
Provide parts-trade-in replacement services.

Reduce dealers' cost to install and service.

Suggest flat-rate charge for repairs.

Make time-and-motion studies of various dealer tasks.

Furnish men to check dealers' methods.

Provide company-owned stores to test methods.

**EDUCATIONAL SERVICES**

Contribute funds for dealer research projects.

Furnish educational materials and equipment to schools.

Publish and distribute proceedings of educational conferences.

Furnish notebooks, identification cards, supplies.

Provide generally informative films for public showing.

Publish case history of successful sales methods.

Prepare train-the-trainer manuals.

Establish public vocational education courses.

Offer advanced courses in supervision and management.

Furnish meeting rooms and equipment.

Support trade association conventions, exhibits, research, and education.

Teach salesmanship and sales management.

Assist owners in setting up training schools.

Teach engineering.

Provide speakers for trade association conventions.

**ADVISORY SERVICES**

Advise what it takes to start and succeed.

Precaution—offer trial jobs.

Publish success stories—how others did it.

Hold group meetings and seminars so dealers can exchange ideas and methods.

Furnish complete business franchise.

Conduct dealers' councils for problems and opportunities.

Give management consultant services.

Provide industry news from distant places, fashions, imports.

Provide employment service.

Offer "home use" awards.

Keep dealers' morale high—show new techniques and opportunities.

Furnish legal advice.

Tell dealers where they can relocate.

Analyze retail advertising.

Find a buyer when dealer wishes to sell out.

Assist in settling estates—appraisal of businesses.

**PROMOTIONAL SERVICES**

Advise on lighting and material handling outlay.

Provide signs—street and interior.

Furnish window displays and specialists.

Provide sales aids and pass-out material.

Tell of new uses for dealers' services and products.

Provide store lay-out kits.

Cooperate in providing uniforms, caps, and badges.

Teach principles of merchandising.

Develop new products.

Package so merchandise "sells itself."

Improve product design.

Establish and operate showrooms.

Help dealers sell their services.

Share dealers' advertising costs.

Distribute samples in the retailers' areas.

Provide traveling exhibits.

Exhibit at fairs, trade shows, and other public gatherings.

Make sales calls with distributors' salesmen.

Provide incentives to dealers and their salesmen.

Raise dealers' prestige through institutional advertising.

Create a demand for new products and services.

## Books on Pesticides

**WEEDS—Second Edition (1955)**

W. C. Muenscher

Entire book has been revised and reset, with descriptions of seventy weeds added to the original list of five hundred, plus twelve new full-page plates depicting nineteen kinds. Keys and full descriptions provided for identification with detailed illustrations of 331. Types and sources of weeds, their means of reproduction and dissemination, and the amount of damage they inflict on crops. Specific directions for control, with reference to chemical methods of recent discovery ..... **\$10.00**

**CHEMICAL BUSINESS HANDBOOK**

Dr. John H. Perry

1,300 double column pages, the equivalent of several average books; 700 illustrations, by 124 contributors. Market research data section is 280 pages, business mathematics 200 pages, financial and accounting 142 pages, research and development 150 pages, sales and advertising 92 pages, twenty sections in all. The book deals with chemical management problems and is useful to technical men, engineers and executives, in the chemical and allied fields. Dr. Perry is editor of the Chemical Engineers Handbook, a companion publication ..... **\$17.00**

**INSECT PESTS OF FARM, GARDEN and ORCHARD Fifth Edition (1956)**

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages ..... **\$8.50**

**DDT and NEWER PERSISTENT INSECTICIDES**

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatibility of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations ..... **\$8.50**

**APPLIED ENTOMOLOGY—Fifth Edition**

H. T. Fernald and Harold H. Shepard

This text since 1921 has had an outstanding record of usefulness. The Fifth Edition preserves the general organization and coverage, with changes to improve the presentation and to incorporate new knowledge. Contains chapters on anatomy, physiology and development. The economic importance and control of insects are discussed in a general way with much attention to insecticides. The classification of insects is emphasized, with examples drawn from species conspicuous for being very harmful or decidedly beneficial. Specific control measures included for injurious forms. Last chapter considers other pest animals closely related to insects. 385 pages ..... **\$7.50**

**DISEASES OF FIELD CROPS—Second Edition (1956)**

James G. Dickson, Professor Plant Pathology, University of Wisconsin

Covers the diseases of cereals, grasses, legumes and fiber plants, which are the major food, feed and fiber sources throughout the world. More than 60 diseases incited by viruses, 40 by bacteria and 300 by fungi are listed and discussed in relation to field crop plants. Identification and information basic to its control, with emphasis on the problems of crop rotation, adaptation and the use of disease resistant varieties. This revised edition includes several new diseases, new illustrations and much recent research in the field ..... **\$9.00**

**THE GARDENER'S BUG BOOK (1956)**

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound ..... **\$7.50**

**THE CHEMISTRY AND ACTION OF INSECTICIDES**

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 504 pages ..... **\$8.00**

**WEED CONTROL**

W. W. Robbins, A. S. Crafts, and R. N. Raynor

A textbook-manual presenting a modern view of the rapidly developing field of chemical weed control. Reports in detail the research on which most modern herbicide usage is based. Weeds, their reproduction, prevention, biological control, chemicals in weed control. Herbicides, foliage contact applications, hormone-like substances, root applications, evaluations of combinations of chemical applications. Weeds of grasslands and turf. Special weed problems, cropped and uncropped areas. Published 1952. 503 pages, 155 illustrations ..... **\$8.50**

**INSECT, FUNGUS AND WEED CONTROL**

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful ..... **\$10.00**

## Order From Croplife

Reader Service Department  
P.O. Box 67  
Minneapolis 40, Minn.

(enclose remittance)

# WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board



## Poison Sumac

(*Rhus Vernix*)

### How to Identify

Poison sumac grows as a coarse woody shrub or small tree, quite unlike the vine-like form of its poison-ivy relatives. The plant usually appears in the eastern half of the U.S. and is ordinarily associated with swamps and bogs, with the most typical growth occurring along the margin of areas of wet acid soil. The plants range in height from 5 or 6 ft. to small trees as tall as 25 ft. As a rule, the shrubs do not have a symmetrical upright tree-like appearance, but are more inclined to lean and have branched stems with about the same diameter from the ground level to the middle height of the plant. Leaves of poison sumac are divided into 7 to 13 leaflets, arranged in pairs with a single leaflet at the end of the midrib. The leaflets themselves are an elongated oval shape without teeth or serrations on the margins. They are 3-4 inches long and 1-2 inches wide, with a smooth velvetlike texture and bright orange color when they first appear in the spring. They later become dark green and glossy on the upper surface and pale green on the lower, and have scarlet midribs. Early in the fall, they turn to a brilliant red-orange or russet shade.

### Harm Done by Poison Sumac

In this category, these unwanted plants cause agricultural losses only indirectly, through harming human beings who come in contact with the plant. Though some people are more tolerant than others to

the effects of the plant's toxic agent (called urushiol) it is considered that such immunity is only relative and that practically everyone is susceptible to some degree to the irritating effects of this substance. The toxic agent, described as a nonvolatile phenolic material, is found in all parts of the plant, including the roots and fruit. Danger of poisoning is greatest in spring and summer when the sap is abundant, and least in the late fall or winter months. Cattle, horses, sheep, hogs and other livestock apparently do not suffer from skin irritation caused by these plants. Dogs and cats, though apparently not susceptible themselves, can carry the toxin to human beings on their fur.

### Chemical Control of Plant

Poison sumac can be controlled by chemical herbicides without danger of the plant's poisoning the operator. Except in cases of unusually heavy growth, the operator may stand at a distance from the plants and apply herbicide. Chemicals recommended by various agencies include ammonium sulfamate, 2,4-D, ammonium thiocyanate, borax, 2,4,5-T (either alone or in combination with 2,4-D), creosote oil, fuel oil, sodium chlorate and sodium arsenite. Warnings are always in order concerning the fire hazards associated with sodium chlorate, particularly when the chemical is mixed with wood, cloth, or other organic materials which make it extremely combustible and easily ignited.

Illustration of Poison Sumac furnished Crophlife through courtesy of U.S. Department of Agriculture, Beltsville, Md.

## Gloomicides

She was going to have a baby, but she couldn't decide just how to tell him. But when he told her they would celebrate their wedding anniversary any way she wished, she thought she saw her chance.

When he got home from the office she said: "Darling, I bought 3 tickets for the theater."

"Fine," he answered, "but sweetheart, there are only two of us."

"Oh, yes?" she replied. "That's what you think!"

Nearly every motorist is in the position of this applicant for a driver's license. He wrote "No" to the question, "Have you ever been arrested?" And then he was momentarily stumped by the question that followed immediately, "Why?" In a moment of truth he wrote down, "I just wasn't caught."

A subscriber to Dun & Bradstreet was baffled the other day when he received an envelope from the outfit with nothing in it. He phoned Dun & Bradstreet to ask what they had in mind. "How would we know," said the young lady who answered his call, "if there was nothing in the envelope?"

A gentleman quarreled with his wife and moved out to a hotel. All day he brooded, but by dinner time he was hungry and sorry, so he called her.

"Hello, Sarah. What are you making for dinner?"

"Poison I'm making."

"So make only one portion. I'm not coming home."

A northern farm hand went to work for a Texas rancher. There had been a long drouth, and every man on the ranch was hoping for rain. One day it started to sprinkle, and the farm hand, to show his delight, began to dance in the rain.

"Hey, you," shouted the ranch owner, "come in out of the rain!"

"Oh, I don't mind it a bit," called back the farm hand.

"That isn't the point," insisted the rancher. "I want every drop of that water to fall on Texas."

Secretary to friend: "He looks like an expense account, but he spends like a minimum wage."

A lady we know, who lives in a large apartment house reports that she found a strange black cat meowing outside her door last week. A kindly type, our friend went to the refrigerator, filled a saucer with milk, and set it out in the hall for the cat. Then she went shopping. When she returned, the cat was gone, the milk was gone, and the saucer, clean as could be, contained a note that said, simply, "Thank you." The whole matter has left our lady very unsettled.

The Scot said to his neighbor, "So your fourth daughter's getting married, Jock. You must be very pleased."

"Aye," returned Jock, "but the confetti is getting awful dirty."

Her lips quivered as they approached mine. My whole frame trembled as I looked into her eyes.

Her body shook with intensity as our lips met, and then my chin vibrated and my body shuddered as I held her to me.

The moral is, of course: Never kiss with the engine running.

## Johnson's Wax to Sell Specialty Chemicals

NEW YORK—Johnson's Wax has announced a plan to enter the specialty chemicals field as basic supplier of a new chemical discovery, diphenolic acid, which Johnson's will sell under the trademark of "DPA."

According to W. H. Keland, manager of the DPA Enterprise for Johnson's Wax, DPA has a potential in a wide variety of industries, including agricultural chemicals.

The company has capacity for introductory samples and test quantities of the new chemical. It will take approximately 12 months to prepare production facilities and during this time market development will continue. This activity is being coordinated by C. J. Bown, market development engineer for the Johnson's Wax DPA Enterprise.

## Du Pont Weed Killers Get New Trademarks

WILMINGTON, DEL.—Two new trademarks have been adopted by the Du Pont Co. for neburon and fenuron, members of the family of substituted urea herbicides, and changes in the use of the trademarks "Karmex" and "Telvar" for the compounds, diuron and monuron, have also been announced.

The new trademark "Kloben" now identifies neburon weed killers (formerly known as "Karmex" N), and the trademark "Dybar" now applies to fenuron weed and brush killers. Fenuron weed and brush killer was formerly known as "Karmex" FP.

"Telvar" will now identify only products based on monuron, and "Karmex" will identify only products based on diuron. Up to now the trademark "Karmex" has distinguished all agricultural herbicide formulations of the substituted urea herbicides. The trademark "Telvar" has been used to identify industrial formulations. Under the new nomenclature, all appropriate recommendations will be included on each label.

## PUBLISH LEAFLET

ATHENS, GA.—The University of Georgia's college of agriculture has published a leaflet entitled "Entomology Leaflet No. 16, Control of Scale Insects and Mealy Bugs on Ornamentals." C. R. Jordan, extension entomologist, compiled and wrote the article.

## USDA

(Continued from page 1)

dedicated from 50 counties in nine southern states since the beginning of a campaign against it in 1957. This helps to prevent further spread and to whittle down the size of the extensive area where the ant has established itself. No new infestations of khapra beetle, stored-grain pest, have been found in New Mexico since April, 1957 or in California since April of this year, although some live beetles still appear occasionally in Arizona and across the border in Mexico.

Treatment of large areas of northeastern forests with DDT in 1957 and 1958, to halt spread of the gypsy moth, paid off. Moths were found in only three traps this year in the treated areas in Pennsylvania, New Jersey, and New York.

The worst outbreak of grasshoppers since 1949 required treatment of more than 5 million acres of rangeland and idle land in 14 western states. The cooperative USDA-state-rancher control effort protected vast acreages of cropland from extensive grasshopper depredations, particularly in Colorado, Texas, Wyoming, Oklahoma, and Kansas.

A \$3-million program aimed at eradication of witchweed, parasite of corn and related crops, got under way in North Carolina and South Carolina.

Despite domestic control and quarantine programs, some crop pests spread into or were uncovered in new areas—the pink bollworm of cotton, the soybean cyst nematode, the rice disease (hoja blanca), and the Japanese beetle. Control or eradication measures against these pests continue.

Aircraft dropped cardboard boxes containing live screwworm flies sterilized by exposure to radioactive cobalt over about 70,000 square miles in Florida, southern Georgia, and southeastern Alabama. Up to 50 million flies a week were distributed at the year's peak of the campaign to eradicate the costly livestock pest from the Southeast. Mating of sterile males with female flies is expected to reduce and eventually eliminate reproduction of the insect there.

Amended regulations tightened protection against accidental importation of foreign plant pests and livestock diseases. A federal court in New York ruled that a state is within its rights in applying insecticides as may be necessary when it is in the public interest to control a destructive pest (in this case the gypsy moth) and that such essential treatment is no violation of individual property rights.

In cooperation with U.S. Customs, plant quarantine inspectors examined a mountain of incoming baggage—some 17 million pieces—for dangerous plant material in the year ended June 30. They inspected 59,000 vessels, 121,000 aircraft, 10.5 million vehicles and freight cars from Mexico, and 69,000 importations. They intercepted 311,000 lots of unauthorized plant materials. During these activities they intercepted 18,000 lots of destructive plant pests that include some of the world's worst agricultural threats.

## Fertilizer Increases Profit from Sorghum

PLAINVIEW, TEXAS—Proper fertilization of grain sorghums can increase net profits by \$23 an acre, according to Frank Moore, farmer. Mr. Moore was one of the founders of the Texas Research Foundation's High Plains Station at Halfway, and says these figures have been proved by tests conducted by the station.

In citing a need for greater water conservation, Mr. Moore urges farmers to increase yields wherever possible, so that each acre foot of water will yield the most benefit.

At present there are approximately 42,000 irrigation wells on the High Plains. They are pumping a total of five million acre feet of water for about the same number of acres.

Underground water is being depleted steadily, Mr. Moore points out. Within a score of years the cotton and grain sorghum center of the Southwest could revert back to a semi-desert.

Mr. Moore says that fertilization of cotton also resulted in increased profits. The station is now trying numerous combinations of fertilizer on the station and on farm fields in the vicinity.



# Salutates Temporis

## PERCY KENT BAG COMPANY, INC.

KANSAS CITY • BUFFALO • NEW YORK

MCMLVIII

## Industry Patents and Trademarks

2,863,725

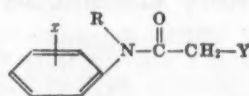
**Process for Making Sulfur Free Hydrogen Sulfide.** Patent issued Dec. 9, 1958, to Aylmer H. Maude and Donald E. MacFadyen, Niagara Falls, N.Y., assignors to Hooker Chemical Corp., Niagara Falls. In a continuous process for making hydrogen sulfide by reacting elemental hydrogen with sulfur the steps comprising: introducing sulfur into a bath of molten sulfur; bubbling hydrogen into the molten sulfur bath, regulating the amount of hydrogen entering the sulfur bath and regulating the temperature at the top of said bath so that the vaporous mixture emerging from the top of the bath into the vapor zone contains hydrogen and sulfur in a ratio of at least 10% more than two atoms of hydrogen per atom of

sulfur; passing the vaporious mixture into a packed catalytic reaction zone containing a catalyst consisting of molybdenum sulfide deposited on a carrier of activated bauxite; maintaining the catalyst bed at about 330° centigrade, and continuously recovering substantially sulfur free hydrogen sulfide of uniform quality directly from the catalytic reaction zone at a high rate of production.

2,863,752

**Herbicides.** Patent issued Dec. 9, 1958, to Philip C. Hamm, Webster Groves, and Angelo J. Speziale, Kirkwood, Mo., assignors to Monsanto Chemical Co., St. Louis. A composition for inhibiting the germination of seeds and the growth of plants which comprises a herbicide conditioning agent and in an amount sufficient to

exert a herbicidal action a compound of the structure



wherein Y is a halogen atom, wherein R is a radical selected from the group of alkyl radicals having up to six carbon atoms, the alkenyl radicals having up to six carbon atoms, the alkynyl radicals having up to six carbon atoms, the halo-alkyl radicals having up to six carbon atoms, the halo-alkenyl radicals having up to six carbon atoms, and the halo-alkynyl radicals having up to six carbon atoms; and wherein x is selected from the group consisting of a hydrogen atom, the halogen atoms, a nitro radical, and the alkyl radicals having up to four carbon atoms.

2,863,753

**Method of Weed Control.** Patent

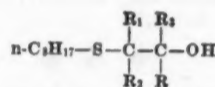
issued Dec. 9, 1958, to Ralph Louis Wain, near Ashford, England, assignor to National Research Development Corp., London. A method for the control of weeds in crops selected from the class consisting of clover, celery, carrot, parsnip and pea which comprises applying to the crop area at a rate sufficient to kill the weeds without significant damage to the crop a herbicide of the class consisting of the *w*-(2-methyl-4-chlorophenoxy)-butyric and caproic acids, their salts, esters, amides and nitriles.

2,863,754

**Method of Weed Control.** Patent issued Dec. 9, 1958, to Ralph Louis Wain, near Ashford, England, assignor to National Research Development Corp., London. A method for eradicating weeds from crop areas containing a growing crop selected from celery, parsnip, pea and leguminous fodder crops of the genera *Trifolium* and *medicago* which comprises applying to the crop areas a herbicide of the class consisting of the *w*-(2:4-dichlorophenoxy)-butyric and caproic acids, their salts, esters, nitriles and amides, at a rate sufficient to kill the weeds without significant damage to the crop.

2,863,799

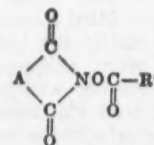
**Repellents for Stable Flies.** Patent issued Dec. 9, 1958, to Lyle D. Goodhue, Bartlesville, and Kenneth E. Cantrel, Dewey, Okla., assignors to Phillips Petroleum Co. A method of repelling stable flies from a place frequented by said flies which comprises applying at said place, in an amount sufficient to effectively repel said flies, a mono-condensation product of an alkylene oxide and a mercaptan, said product being characterized by the following structural formula



wherein: R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, and tert-butyl radicals; and the total number of carbon atoms in R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> does not exceed four.

2,863,801

**Fungicidal Composition Comprising an O-Carboxylic Acid Ester of a Cyelic Oximide.** Patent issued Dec. 9, 1958, to Engelbert Kuhle, Koln-Stammheim, Richard Wegler, Leverkusen, and Ferdinand Grewe, Koln-Flittard, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany. The process of controlling fungus on living plants which comprises applying to the plant a fungicidal composition having as an active ingredient an O-carboxylic acid ester of the general formula



in which A is the residue of an organic dicarboxylic acid, and R' is a member selected from the group consisting of an aliphatic, aromatic, alkoxy and aryloxy radical.

2,863,802

**Treating Plants with the Systemically Active Fungicide, Lower Alkyl, 2-(3,3,3-Trihalo-2-Hydroxypropyl)-Pyridine.** Patent issued Dec. 9, 1958, to William J. Pyne, Painesville, Ohio, assignor to Diamond Alkali Co., Cleveland. The method of treating plants which comprises applying as a systemically active material, a composition containing as an essential active ingredient a lower alkyl-substituted-2-(3,3,3-trihalo-2-hydroxypropyl)-pyridine.

**PUT THE  
WORLD'S GREATEST  
RAT KILLER  
TO WORK FOR YOU!**

WARFARIN is the world's most wanted rodenticide. Ten years of use have proved its complete and effective extermination of rats and mice. There's no build up of tolerance, so rats never become bait-shy. Minute intake causes internal bleeding and certain death.

WARFARIN is the world's most highly promoted rodenticide. Advertisements in leading farm papers and magazines have been seen by millions of readers, creating a growing consumer demand year after year.

Now—as never before—is the time for you to take advantage of the extra profits and unequalled performance of DETHMOR® WARFARIN.

**WARFARIN**

**PENICK**  
Agricultural Chemical and Insecticide Division  
S. B. PENICK & COMPANY 50 CHURCH ST., NEW YORK 8 • 735 W. DIVISION ST., CHICAGO 10

## Supervisory Group Holds Regional Safety Work Course

AUSTIN, TEXAS — Supervisory personnel from fertilizer plants in southwestern U.S. took part in the fourth in a series of regional safety work courses sponsored jointly by the National Plant Food Institute and the fertilizer section of the National Safety Council at the Sheraton-Terrace Motor Hotel here, recently.

A. I. Raney, safety director for Phillips Chemical Co., served as general chairman and was assisted by Dr. R. L. Beacher of NPFI.

Kick-off speaker was George F. Dietz, past chairman of the council's fertilizer section, who spoke on the tangible values of improved safety operations in the industry.

Glenn C. Peterson, instructor in supervision for the University of Kansas extension division, served as chief instructor and used almost a ton of visual-aid materials as he presented principles and practical applications of safety in plant operations.

W. C. "Billy" Creel, safety director, North Carolina Department of Labor, discussed "Maintaining Good Order for Safety."

Enrollees included safety directors, personnel managers and production supervisors from Olin-Mathieson Chemical Co., Texas Farm Products Co., San Jacinto Chemical Co., Texas City Chemical Co. (Smith-Douglass) and Phillips Chemical Co.

## \$45,000 in Grants Made to University of California For Chemical Research

BERKELEY, CAL. — Research grants totaling about \$45,000 were made to the division of agricultural sciences of the University of California to promote some eight projects in the field of agricultural chemicals.

The largest grant, equal to almost one fourth of the total, was made by the United Fruit Co. for use on the Berkeley campus for research on the pathogenic fungus genus *Fusarium* with particular reference to the *Fusarium* wilt disease of bananas. A grant of \$10,000 was made by the T. B. Walker Foundation, Inc., for research in forest entomology.

The U.S. Department of the Army gave another \$9,261 for research on the degradation and storage of insecticides in normal and resistant insects. The U.S. Public Health Service offered \$5,911 for a study on integrated control methods against pest insects.

Another \$3,000 was given by the Monsanto Chemical Co. for research on insecticides and Monsanto gave another \$2,500 for a separate study on antibiotics in relation to plant pathology. The National Plant Food Institute gave \$2,500 for research on the economic implications of fertilizing certain grain crops in California. The final gift of \$200 was made by the California Avocado Society for further research on avocado root rot.

## Fertilizer Dealers' Day Announced for Oregon

PORTLAND, ORE. — The Seventh Annual Fertilizer Dealers Day, co-sponsored by the soils department of Oregon State College and the Pacific Northwest Plant Food Assn. will be held at Corvallis, Ore., Jan. 22, according to an announcement by Tom Jackson, extension soils specialist.

The annual event is aimed at dealer education in soil testing, application of fertilizer for various types of crops, types of fertilizer to use on crops and soils, etc.

Particular attention will be paid this year to soil testing, as both the college and the association recognize the need for increase in this work in the state of Oregon.

## Pesticide Handling Talks To Highlight Meeting of Ag Aircraft Assn.

FRESNO, CAL. — The safe handling of pesticides, insurance and legislation are three topics featured for discussion during the Ninth Annual Convention of the Agricultural Aircraft Assn., Inc., to be held in Sacramento, Jan. 22-24. Meeting site is the Senator Hotel.

Each daily schedule will include sessions which give attention to the safety problem. On the opening day Dr. Ralph Glasser, toxicologist for the Shell Chemical Corp., New York, will talk on "Practical Aspects of Safe Handling of Pesticides."

An insurance panel January 23 will consider safety in relation to insurance. The panel is composed of a representative of the safety engineer of the Argonaut Insurance Co.,

discussing the AAA group compensation insurance plan; Stuart Turner, consulting agrologist, San Francisco, on "BI and PD Insurance Claims in California"; and F. A. Gaylord, Aviation Insurance, Long Beach, Cal., reporting on the AAA group life and hospitalization insurance plan.

On Jan. 24, there will be two discussions on safety. Dr. Robert S. Ganelin of the U.S. Public Health Service, Phoenix, Ariz., will talk on "Safety with Chemicals," and will be followed by Lewis R. Hall of the Department of Industrial Relations of the State of California, San Francisco, talking on "Safety in 1959."

On other subjects, the legislative panel will discuss such laws or projected laws dealing with the licensing of pesticide chemical salesmen; state aviation gas tax; aircraft tax "in lieu" of present county personal property tax; and aircraft responsibility law.

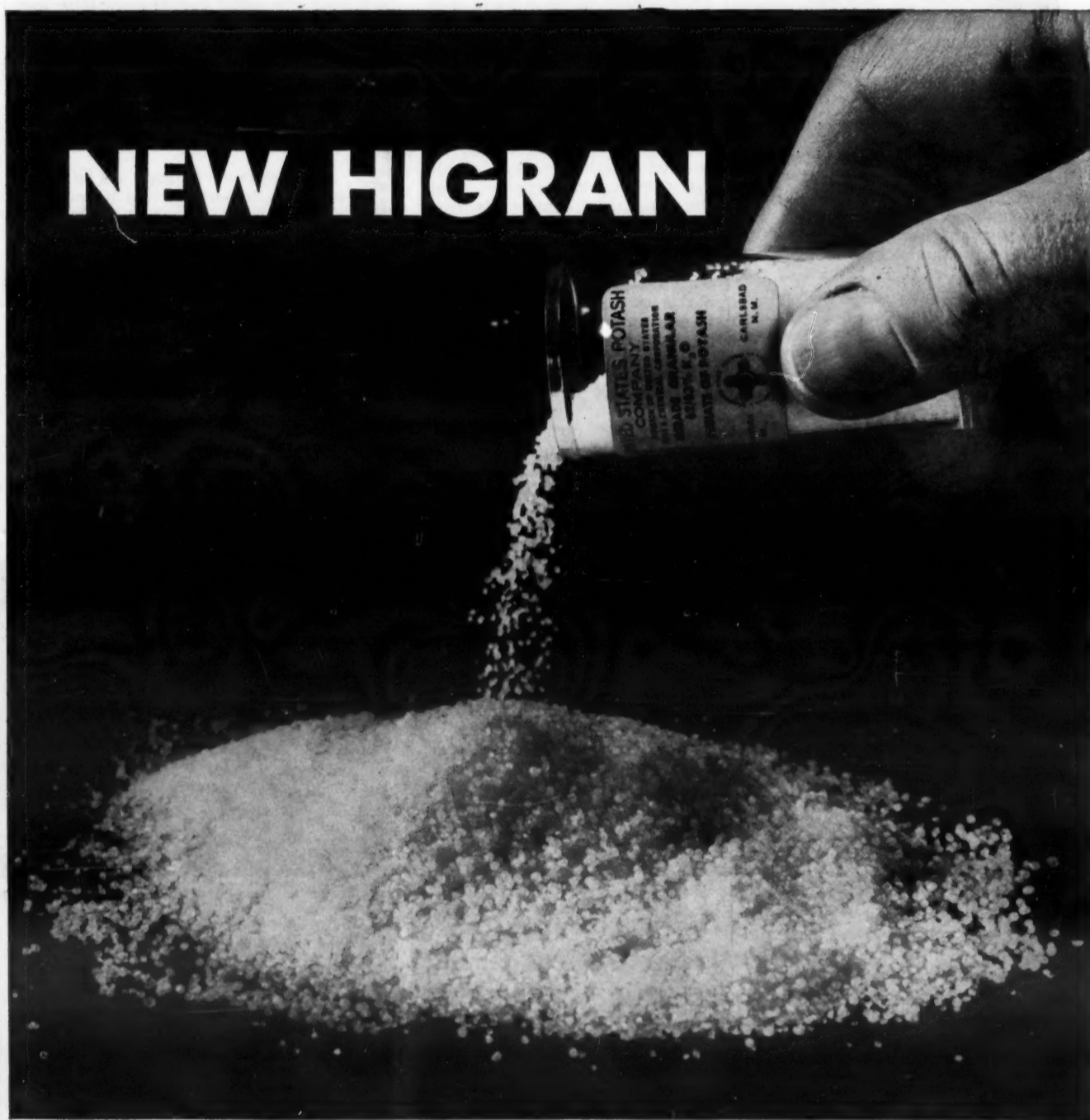
Members of this panel include

CROPLIFE, Dec. 22, 1958—19

Robert Z. Rollins, chief of the bureau of chemistry of the California State Department of Agriculture; Ivor R. Burden, president of the Western Agricultural Chemicals Assn., and vice president of United Heckathorn, Richmond; Stephen P. Teale, West Point, Cal., state senator; and Lloyd Lowrey, Rumsey, California, assemblyman.

"Comparison of Use of Agricultural Aircraft in U.S. and Abroad" is the subject for a Jan. 23 discussion by Norman B. Akesson, associate agricultural engineer of the University of California, Davis. Representatives of the Civil Aeronautics Authority and the U.S. State Forest Service will speak on Jan. 24, together with Robert E. Monroe, assistant executive director of the National Aviation Trades Assn.

The convention will also feature a demonstration of agricultural aircraft and equipment.



## USP'S NEW HIGRADE GRANULAR SPECIALLY SIZED FOR THE MANUFACTURE OF MODERN FERTILIZERS

USP announces the FIRST Higrade Granular muriate of potash designed specifically for the manufacture of today's modern fertilizers. Its perfect whiteness attests to its purity—the highest now available in granular agricultural muriate of potash. Non-caking and free-flowing throughout, USP's new Higrade Granular potash contains 62/63%  $K_2O$ . A regular supply of this important new potash product is immediately available from the U.S. Potash Co.

USP also offers Higrade muriate of potash—62/63%  $K_2O$  and Granular muriate of potash—60%  $K_2O$ —both free-flowing and non-caking.

**UNITED STATES POTASH COMPANY**  
DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION  
50 Rockefeller Plaza, New York 20, New York  
Southern Sales Office: Rhodes-Haverly Building, Atlanta, Georgia



REG. U.S. PAT. OFF.

## BELTWISE

(Continued from page 1)

pattern are indicated from state to state.

Dr. Merkl said the level of resistance has changed very little in North Carolina and Georgia, Alabama, Missouri and Tennessee reported no known boll weevil resistance. Mississippi reported resistance to chlorinated hydrocarbons is increasing in all areas. Louisiana reports indicate boll weevil resistance has spread to the southern part of the state, and Arkansas entomologists say resistant weevils are widespread in the southeast and southwest parts of the state as well as the Upper Arkansas River Valley.

"One new insecticide, Sevin, which has shown up well in field tests during the past two years, has been registered for use on cotton and will be recommended for the control of the boll weevil and several other cotton pests next year," Dr. Merkl said.

He stated changes in recommendations for boll weevil control have come about largely as a result of the resistance problem. The list of individual insecticides recommended for boll weevil control has grown to 11 with the toxaphene-DDT combination making the 12th. The others are aldrin, BHC, calcium arsenate, dieldrin, endrin, guthion, heptachlor, malathion, methyl parathion, Sevin and toxaphene.

Ten new approaches to controlling the boll weevil and other insects were described by Dr. T. B. Davich of the Texas Experiment Station, College Station.

Dr. Davich said the approaches and the research status of each were obtained in discussions and reports of many people. The approaches included:

**1. Diapause**—This approach, Dr. Davich said, offers more immediate promise than any of the others. Diapause refers to the state of arrested growth or reproduction that is typical of hibernating insects. Evidence indicates it takes the boll weevil three weeks or more to accumulate the fat reserves required for successfully entering diapause and surviving hibernation. An intensive research program is in progress to exploit this "weak link." Leads include continuation of an effective chemical control program until the first frost or until the stalks are destroyed.

**2. Sterile Male Technique**—The success of the screwworm eradication program, in which males were made sterile by gamma irradiation, has drawn the interest of cotton entomologists. Preliminary data indicate a radiation dose of 10,000 roentgens will result in a "transient" sterility in male boll weevils. In a single test infertile eggs were laid for two and one-half weeks. After this period, 13% of the eggs hatched normally.

**3. Systemic**—Use of systemic insecticides has proved effective in controlling early season insects. Now a way is being sought to get the insecticide into the cotton square in sufficient amounts to kill the larvae of overwintered boll weevils.

**4. Plant Resistance: Genetic**—Scientists are searching for ways in which the cotton plant can be made more resistant to the boll weevil. Factors in this approach include boll wall thickness, toughness of the carpal lining, plant color, hairy stems and leaves, and the ability of plant cells to grow and crush the boll weevil egg or developing larva.

**5. Plant Resistance: Chemical**—This approach is based on two premises. The first one involves the absorption by the plant of a chemical or chemicals that are effective at the desired site of action, such as a boll. The second premise is that the compounds could have an adverse effect on the biology of the insect, such as inhibiting egg hatch, preventing pupal

development, and excessively prolonging adult emergence.

**6. Attractancy-Repellency**—Although successful with certain insects, this approach has not been investigated sufficiently with the boll weevil. A few naturally occurring materials and chemical compounds have been found to possess a moderate degree of attractiveness under laboratory conditions, but field tests resulted in failure. The aim of a project now under way is to identify the substance or substances which attract the boll weevil to the cotton plant.

**7. Infested Square Destruction**—The vast majority of weevil-infested squares drop from the plant, and population build-ups result primarily from adult emergence from these squares. If a way could be found to destroy these squares, or to kill the weevils developing in them, a damaging infestation would not occur, theoretically, until well past the time ordinarily needed for chemical control measures.

**8. New Insecticides and Formulations**—The speaker said to his knowledge no chemical laboratory has pinpointed the boll weevil as the primary insect in a program of synthesizing new compounds or devising more effective formulations. Development in the near future of an economical method for rearing the boll weevil should help make possible a new compound synthesis and formulation approach devoted primarily to this insect.

**9. Hormones and Antimetabolites**—The "juvenile hormone," since it inhibits molting and, consequently, the formation of the reproducing adult stages, appears to offer a new approach to insect control. A chemically defined diet will be necessary before

research on antimetabolites can make progress.

**10. Native Habitat Study**—A study of the boll weevil in its native habitat may result in finding effective parasites, predators, or diseases not present in the United States.

"Close attention to cultural, harvesting, and ginning practices will help improve and maintain cotton quality," said George J. Harrison of Calcot, Ltd., Bakersfield, Cal.

The agricultural consultant pointed out much has been said about the ill effects of modern picking, ginning, and lint cleaning. "But too little emphasis has been placed on the field conditions which have made all this equipment necessary."

A wise use of nitrogen, combined with timely insect control, he said, often results in maximum yield in a minimum length of time. "When the crop is produced in this manner, fiber properties such as length, strength, and fineness are found to be at or near the best for the variety and more uniform in all respects."

The speaker felt there is an urgent need for a complete review of all cultural practices, particularly those having to do with fertilizers, irrigation, and aeration and their effects on fiber quality.

Experiments indicate calcium plays an important role in getting cotton off to a good start, Dr. A. E. Wiles, plant pathologist at Mississippi State University, State College, told the group.

Dr. Wiles said the experiments were started after it was suspected that lack of calcium might account for the difficulties encountered in growing cotton in sandy soils.

Dr. Wiles said calcium appears to benefit cotton seedlings in the following ways:

- It exerts a beneficial effect on weak seedlings developed from de-

teriorated or partially deteriorated seed;

- It benefits seedlings from initially strong seeds but suffering from adverse growing conditions;

- It aids in developing stronger, tougher plants; and

- It prevents a breakdown of the primary root and certain other parts of the plant.

"This report does not imply that fungi cannot or do not cause stand loss of cotton," the speaker said. He added that the report does maintain that healthy and vigorous plants properly supplied with nutrients could more readily withstand the attacks of fungi and thus have a greater chance of survival.

In the experiments, the source of calcium was gypsum or calcium sulphate. This compound is easy to use and calcium could be supplied the plants experimentally by rolling machine delinted seed in it, Dr. Wiles said.

He said that since many soil fungicides for seedling disease control have a high percentage of calcium compounds, it does not seem "unreasonable that perhaps at least a part of the benefits obtained from such treatment may be due to calcium."

## IMC Schedules Training Meetings

CHICAGO—International Minerals & Chemical Corp. will launch in January a series of nine regional training meetings for 350 salesmen representing 156 fertilizer companies. The company said the meetings would be part of its "Full Orbit" customer service program, started by the company about six months ago.

A. E. Cascino, IMC marketing vice president, said the regional meetings would start in Birmingham on Jan. 5 and continue through Feb. 3. Other cities at which meetings are scheduled are Shreveport, Tampa, Columbia, S.C., Baltimore, Cincinnati, Des Moines and Skokie, Ill.



E. O. Barstow



R. L. Curtis



Donald K. Ballman



C. B. Branch



Leland A. Doan

## Dow Announces Changes In Board, Management

MIDLAND, MICH.—Two changes in the board of directors of the Dow Chemical Co. have been announced with the retirement from the board of Dr. E. O. Barstow of Midland and R. L. Curtis of San Francisco.

Dr. Barstow also retired as vice president but was named to the newly created position of honorary chairman of the board and is expected to attend many of its meetings in an advisory capacity. Mr. Curtis simultaneously retired as general manager of Dow's western division but retains a vice presidency and will remain as senior officer on the West Coast.

Elected to replace the two retired directors were Donald K. Ballman, director of sales, and C. B. Branch, manager of the plastics department. Replacing Mr. Curtis as western division general manager will be Leland A. Doan, assistant general manager of the division since 1955.

Dr. Barstow's association with Dow goes back almost to its founding, having joined the company in 1900 immediately after graduation from

Case School of Applied Science (now Case Institute of Technology). He was responsible for the development of many Dow processes and is known as the "father of magnesium" because of his key role in developing the electrolytic process by which it is extracted from natural brines and sea water, the company said.

He became production manager of inorganic chemicals during World War I and was elected to the board of directors in 1931. He was made a vice president in 1941.

Mr. Curtis joined Dow's sales department in 1922 after the former American Bromine Co., of which he was superintendent, suspended operations. He became assistant general sales manager in 1930 and in 1939 was moved to San Francisco as general manager of the company's Western Division. He was elected to the board of directors in 1948 and was made a vice president the following year.

Mr. Ballman joined Dow's sales department in 1935 after receiving an M.S. degree in chemistry from the University of Indiana. After occupy-

ing various managerial positions in the sales and development areas, he was named assistant general sales manager in 1945. He was advanced to general sales manager in 1949 and to director of sales in 1957.

Mr. Branch began his career with Dow after graduation from Western Reserve University in 1937 and was variously associated with development and production of cellulose products, styrene and plastics. He became manager of coatings sales in 1946 and manager of technical service and development in 1949. He has been manager of the plastics department since 1952.

Mr. Doan joined Dow's sales staff after graduating from Pomona College in 1941. He first served in the San Francisco sales office and later transferred to Los Angeles, becoming manager of that office in 1945. He returned to San Francisco in 1950 as assistant western sales manager, was advanced to western sales manager in 1951 and has been assistant general manager of the Western division since 1955. He is also an assistant secretary of the company.

## Research in the News

Many tomato growers could realize greater returns by growing more plants to the acre in the opinion of Prof. Charles B. Sayre, head of the vegetable crops department at Cornell's New York State experiment station at Geneva.

"For many years it has been customary to transplant about 3,000 tomato plants per acre for canning crop production in this state," says the station scientist. "But our experiments over a period of several years indicate that 3,000 plants are inadequate for optimum yields and that growers would find it profitable to increase the plant population to 5,000 or even 6,000 plants per acre."

Findings in his experiments are briefly reviewed by Prof. Sayre in the current issue of the station's quarterly magazine, "Farm Research."

For the past two seasons Prof. Sayre has introduced a new idea in tomato growing to increase the number of plants to the acre by planting tomatoes in twin rows. By this method the tomatoes are set in pairs of rows with 18 in. between rows and the usual spacing to the next pair.

Remarkably good results were obtained where the plants were set 3 ft. apart in twin rows, with 4 ft. between each pair of rows. This spacing required 5,280 plants to the acre and gave a yield of 20.4 tons of red ripe tomatoes to the acre. "In our 1957 test this proved to be the most effective spacing," he says, "1958 yields have not yet been computed."

Many costs in growing tomatoes are the same regardless of the number of plants to the acre, points out the station worker. "Cost of the land, fertilizer, spraying, use of equipment, interest, etc., are the same whether 3,000 or 6,000 plants are grown per acre. The only added costs are for the additional plants and higher picking costs from the heavier yields."

"In the Midwest and Far West where the growing season is longer, it is common practice to sow tomato seed directly in the field and thin out the surplus seedlings. Most successful growers in these areas leave 6,500 to 8,000 plants to the acre."

An agronomy professor says New York State farmers, particularly those in the North Country, Hudson Valley, and the Southern Tier, could grow an additional two million acres of high-yielding alfalfa and birdsfoot trefoil in place of low-yielding red clover and timothy.

Prof. Reeshon Feuer of the New York State College of Agriculture says there are a million acres of soil drained well enough for alfalfa, a mixture of Narragansett alfalfa and Viking trefoil, and 900,000 acres of soil good enough for birdsfoot trefoil.

Now, farmers are growing red clover and timothy on this land. Prof. Feuer says both of these are lower yielding and less valuable as feed, and red clover lasts only one year.

In the Southern Tier, for example, farmers could easily double their acreage of alfalfa and alfalfa mixtures if they apply enough lime to bring the plow layer up to 6.8 pH and use recommended varieties.

Lime is important, Prof. Feuer says, because many soils don't have enough. A total of 554 soil tests in Tioga County, for example showed that 45% of the soils don't have enough lime to grow legumes.

But the professor says it will pay farmers to add the lime to grow alfalfa and birdsfoot trefoil because the

results are "far superior" to what they're getting now.

Farmers in the Central Plain could also boost alfalfa and birdsfoot trefoil acreage, but lime is not as important there because most of the soil already has enough.

New York farmers are now growing 1.4 million acres of alfalfa and birdsfoot trefoil. This is half the acreage of deep-rooted legumes grown in the northeast. But there are still 1.9 million acres of red clover and timothy grown in the state.

Research at the Connecticut Agricultural Experiment Station has added to knowledge of insects and their control, station scientists reported to entomologists meeting in Baltimore.

Dr. Robert C. Wallis has found no evidence that *Culiseta melanura*, a mosquito, is a "principal vector of transmission" of the virus that causes eastern equine encephalitis. The species has been suspect since 1951, when research in Louisiana showed that it could carry the virus. Dr. Wallis has collected mosquitoes of this species on only three of 25 farms where encephalitis struck horses or birds. The species accounted for about 10% of all adult female mosquitoes from these farms examined for virus. No virus was found in 15,819 mosquitoes processed.

James B. Kring reported on survival of the eastern field wireworm, a serious pest of tobacco, potatoes, and other vegetables. Complete information on the life cycle of these insects is useful in developing control methods. He finds that in the early stages the eastern field wireworm will feed on a varied assortment of foods, ranging from honey to yeast, and also on other wireworms. But they moulted and survived only when insects were provided as food.

Damage to woodlands was slight from the 1958 infestation of orange-striped oakworms, worst on record in this state, Dr. Stephen Hitchcock reported. Dr. Hitchcock said that about 37,000 acres were defoliated, principally in southeastern Connecticut where home owners were greatly annoyed by the pest. Studies of the pupal stage of the insect this fall showed that many survived in areas of heavy infestation, but approximately one-third are already dead from natural causes.

J. Peter Johnson pointed out that lawns and ornamental plantings represent a heavy investment in urban and suburban Connecticut. Owners and their advisers expect and receive professional information on control from agricultural research workers. Mr. Johnson believes that "protective schedules" for certain trees and ornamentals might be developed to cover control of many insects now treated as individual problems. Such schedules would be useful both to the commercial operator and to the "do-it-yourself" horticulturist.

Results of research on combination sprays for control of pests in apple orchards were reported by Dr. Philip Garman. Dr. Garman has evaluated these spray combinations for the past two years in terms of relative effectiveness as measured by the percentage of clean fruit, quality of the apples, safety in application, cost of materials, and effects on ground fauna. He rates first a combination of guthion (insecticide) and captan (fungicide), and second, a mixture of Sevin, Kelthane, and captan.

## Merck Scientist Reports "Gibrel" Helps Texas Cotton Length, Yield

HOUSTON, TEXAS—According to Merck & Co., Inc., Rahway, N.J., applications of "Gibrel," a plant growth substance developed by the company, will increase cotton fiber length without sacrificing diameter.

Dr. James M. Merritt, manager of the plant products development department of Merck & Co., said: "Sprays of Gibrel improved both yield and quality of Texas cotton varieties in the first tests on a 117 acre block of cotton on the Ernest W. Bass farm near Muleshoe, Texas."

The reports were made at the Beltwide Cotton Conference held Dec. 16 at the Rice Hotel here.

"Extra growth from one spray of Gibrel at squaring time and another spraying five weeks later," Dr. Merritt reported, "increased the yield 18.4 bales on 51 acres of treated cotton."

Merck's 0.5% Gibrel liquid was used for the test, applied by airplane when squaring began on June 14, and again on July 19. The cotton was harvested, starting Oct. 17. Stripping was completed Nov. 25.

One block of Northern Star and Lankart varieties, sprayed with four ounces of Gibrel an acre per application, yielded 1.64 bales an acre—approximately a 50% increase. A similar untreated block yielded only 1.16 bales an acre.

Samples of Northern Star fiber have been analyzed, and, where Gibrel was applied, Dr. Merritt said, the character was typical of the variety: average as to fineness, and average to fair as to strength, according to these samples.

Fiber from cotton plants that did not receive Gibrel measured 1.04 in., and from plants receiving Gibrel 1.06, 1.11, and 1.16 in.

Beltwide tests have shown that boll loading can be increased with Gibrel spray, and that, when there is a permanent growth increase, the yield will be significantly larger, he continued.

"Apparently, the fiber quality improvement is a related benefit," Dr. Merritt added, "where the total-season growth response is particularly good."

Tests with Gibrel in west Texas confirm findings by Dr. V. T. Walhood, plant physiologist at the USDA Cotton Field Station, Shafter, Cal., who found the growth stimulant increases cotton fiber length without sacrificing diameter.

Dr. Harry C. Lane, assistant plant physiologist at the Lubbock substation of Texas A&M College, included the results of these Gibrel tests in cotton in a presentation before a session of the Cotton Physiologists Conference which preceded the National Cotton Council meeting in Houston.

It is significant, Dr. Merritt added, that Gibrel has demonstrated its benefits in western Texas, where environmental conditions normally limit growth, yield and fiber quality.

Current tests with Gibrel showed "a steady increase in boll counts through the entire growing season." This is the first time any commercially applied plant growth stimulant spray has been used to increase fiber length, and it demonstrates the practicability of Gibrel, he said.

### COTTON COUNCIL MEETING

ATLANTA, GA.—More than 1,000 cotton industry leaders are expected to attend the 21st annual meeting of the National Cotton Council at the Dinkler Plaza Hotel in Atlanta, Feb. 9-10. Recommendations of the four major program division committees—Production and Marketing, Utilization Research, Sales Promotion, and Foreign Trade—as well as general resolutions on matters affecting the cotton industry, will be acted upon by delegates.

## California Farmer Increases Beef Yield Per Acre by 180%

SAN MARINO, CAL.—An increase of 365 lb. of beef an acre, or 180%, due to range fertilization, was experienced by Joseph M. Urrutia, livestock producer of Friant, Cal., according to the California Fertilizer Assn.

Mr. Urrutia reported th's performance of fertilizer on his own range at the recent Western Range Fertilization Conference in Redding, Cal., sponsored jointly by the National Plant Food Institute and the soil improvement committee of the California Fertilizer Assn. He was a featured speaker on "Range Fertilization in the San Joaquin Valley."

The Urrutia range discussed lies in the east side foothills of Madera County. The soil is largely Vista fine sandy loam, free of brush, and with very little granite outcropping.

The cover is mostly native grasses and alfalfa, with annual clovers found in swales, and on north and east slopes. Normal rainfall is 15 in. per year.

The commercial fertilizer applied was 380 lb. of ammonium sulfate an acre between Dec. 1 and 15, on 40 acres per year, for four years. Application was broadcast, employing an EZFlow spreader, at a cost of \$1 per acre. One man and a tractor covered about 40 acres per day.

Carrying capacity was one steer to four acres on the unfertilized land, and one steer per acre on the fertilized land.

Mr. Urrutia reported the total beef production for four years as follows: 565 lb. an acre with fertilization—200 lb. an acre with no fertilization.

He capitalized the net gain per acre, due to fertilization, at \$11. He found that fertilization kept grass growing in cold weather; fertilized grass held up better because of better root growth; and in all four years fertilized grass developed 20 to 30 days earlier in the season, and was maintained 10 to 20 days later.

## \$40-50,000 Fire Damage to Des Moines Insecticide Plant

DES MOINES, IOWA—Fire destroyed the main building of the former Barco Chemical Co. here, just outside the city limits at Pierick Lane and Vandalia Road, Dec. 9. According to John Barakat, president of the firm, the loss amounted to \$40-50,000, part of which is covered by insurance. The building was 40 ft. by 80 ft. and was used as a warehouse. The company's office building was not harmed.

The firm makes commercial insecticides and weed killers.

REMEMBER TO ORDER

# CHASE BAGS

There's None Better!



# Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Northeastern states.

## SOBERING THOUGHT . . .

### Agricultural Progress in Future Depends On More Incentives for Science Students

ONE OF the perplexing problems wrinkling the brows of thoughtful persons in scientific fields including entomology, plant pathology, agronomy and related disciplines is that of training youth for responsible positions in the years to come. Obviously, training as complex as that demanded for excellence in these areas cannot be obtained quickly and easily. A paucity of young people heading in that direction at the present time means perhaps acute shortages of agricultural scientists in the next decade or even earlier.

What might be done to offer incentives to youngsters in the secondary school level to steer them into the more difficult mathematical and scientific courses? The temptation is, of course, for the student to choose "soft" courses such as personality development, proper home life and manual dexterity where good grades are made with relative ease and skip the rigors of intellectual achievement in heavier courses where competition is keener and the work more difficult. This in no way minimizes the value of lesser studies for students, but we know there are many high schoolers who are living in the basement of their intellectual capabilities because no one has encouraged them to move upstairs.

In a recent address before the American Chemical Society by Clifford F. Rassweiler, vice president for research and development, Johns-Manville Corp., this problem of adequate incentives was pursued with unusual forthrightness. He indicated the need for better-trained teachers, but added that this is not the complete answer to the problem. In addition, he said, "we must provide the incentives necessary to persuade students to acquire a really sound and adequate education even when it is offered to them in the best possible way."

Mr. Rassweiler submitted that the matter is not one of academic interest only but, rather, one of great importance to the nation. The tendency toward resting on the oars is not a healthy one, he reminded, even though it may be difficult to impress everyone of the necessity for alert thinking and preparing for the future.

"People are likely to assume that a free enterprise system will automatically provide the right incentives by giving the biggest rewards to those who serve the system best," he said. "But as a civilization becomes more complex and mature, there are many factors that prevent incentives from automatically adjusting themselves to stimulate the effort required for the civilization's progress and security."

"In a pioneer civilization, the community's needs are obvious and the things which need to be done for its well-being and security are easily understood. In a complex civilization, the needs are often hidden and the action which should be taken is not clearly apparent. Those in power, instead of adjusting incentives to stimulate the proper action, may actually set up restrictions which hinder the effectiveness of even natural incentives."

"In a pioneer civilization, or in a backward economy like Russia's, most of the people have so little that it is easy to provide rewards which are powerful stimulants for energetic action. In a mature, prosperous civilization, however, most people achieve a very satisfactory standard of living with only a moderate amount of effort. It is hard to provide rewards which will

stimulate them to maximum rather than perfunctory activity.

"In a pioneer civilization, everyone has a keen personal sense of the urgency of the community's needs and hazards. As a civilization becomes prosperous and complacent, the less capable feel safe and self-reliant. People see little need for stimulating something as abstract as scientific accomplishment by providing special incentives for the limited number of people with special capabilities."

"In a prosperous democracy, there seems an inevitable tendency for people to be preoccupied with seeing that no one gets more than he deserves, rather than seeing that rewards are provided which will assure the maximum effort on the part of those who are most capable."

"As a civilization approaches the ultimate objective of Utopia, there is an increasing tendency for people to sit back and begin to enjoy it. But it is hard to conceive of Utopia lasting very long without some incentive for its inhabitants to put forth the effort necessary to preserve it. The closer we get to Utopia, the harder it is going to be to provide the incentives necessary to prevent our falling back into the same pit that has engulfed so many fat civilizations."

These are sobering words but, at the same time, thoughts which agricultural scientists should not allow to be pigeonholed for later reviewing.

There is a strong current pulling away from the agricultural field many of the bright young people who do show aptitude for science and a willingness to submit to its disciplines. Great as the need is for men working in the physical sciences, it would be shortsightedness in the extreme for the country to let down on its emphasis for more youngsters to set their sights on the agricultural sciences.

### Mississippi Acre in News Again with 227 Bu. Corn

THE EYES of the agricultural world are turned once more toward that single acre of corn in Prentiss County, Mississippi, where phenomenal yields have become commonplace during the past several years. The country waits eagerly each year to see how many bushels of corn will be harvested from this plot by its youthful operator, Lindon Ratliff, who this year garnered some 226.99 bu.

While somewhat short of the 304.38 bu. record set by Lindon's brother Lamar in 1955, the nearly 227 bu. is not bad by any other standard. We hope that Lindon will keep at his corn-growing activities and keep the world reminded that special effort and intelligent management of crop growing can not only make outstanding yields, but can also pare down unit costs to the bone.

Some of the things Lindon did to produce his big yield are worth reviewing. He began his fertilization program last fall and continued through the winter months with 75 wagon-loads of manure, then about a week before planting time early in April, he placed 1,000 lb. of 14-14-14 and 700 lb. nitrate of soda about 16 inches deep. At planting time, the acre received an additional 200 lb. of 14-14-14 about four inches deep.

Most growers by this time would be thinking "this is surely enough!" but not Lindon. When the corn was knee-high he sidedressed with 300 lb. of 14-14-14 and 300 lb. nitrate of soda. The results are well known.



Croplife's Home Office

## Croplife



Member of Business Publications Audit



Member of National Business Publications

CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

Editor

DONALD NETH

Managing Editor

EDITORIAL STAFF—John Cipperly, Washington Correspondent; George E. Swarbrick, Canadian and Overseas Editor; Emmet J. Hoffman, Marketing Editor; Duane F. McKenzie, Research Director.

ADVERTISING STAFF—Wilfred E. Lingren, Advertising Director; Carl R. Vetter, Advertising Department Manager; Bruce A. Kirkpatrick, Advertising Production Manager; R. Dale Swenson, Promotion Manager.

BUSINESS STAFF—Martin E. Newell, Chairman of the Board of Directors; Milton B. Kihlstrum, President and Treasurer; Wilfred E. Lingren, Executive Vice President; Don E. Rogers, Vice President; Paul L. Dittmore, Vice President; Donald Neth, Secretary; T. A. Gaden, Circulation Manager; James G. Pattridge, Assistant Treasurer; Richard Ostlund, Office Manager; Walter O. Buchkosky, Production Superintendent.

### BRANCH OFFICES

EASTERN STATES—Paul L. Dittmore, Manager; James W. Miller and George W. Potts, Advertising Sales Representatives; Suite 3214, 551 Fifth Ave., New York 17, N.Y. (Tel. Murray Hill 2-2185).

CENTRAL STATES—Don E. Rogers, Manager; Henry S. French, Assistant Manager; Amos W. Standish, Advertising Sales Representative; 2832 Board of Trade Bldg., 141 W. Jackson Blvd., Chicago 4, Ill. (Tel. Harrison 7-6782).

SOUTHWEST—Martin E. Newell, Manager; Thomas E. Letch, Assistant Manager; 612 Board of Trade Bldg., Kansas City 5, Mo. (Tel. Victor 2-1350).

NORTHWEST—Paul A. Anderson, Advertising Sales Representative, P.O. Box 67, Minneapolis 40, Minn. (Tel. Franklin 4-5200).

WASHINGTON CORRESPONDENT—John Cipperly, 604 Hibbs Bldg., Washington, D. C. (Tel. Republic 7-8534).

EXECUTIVE AND EDITORIAL OFFICES—2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by

THE MILLER PUBLISHING CO.

2501 Wayzata Blvd., Minneapolis, Minn.

(Address Mail to P. O. Box 67, Minneapolis 40, Minn.)



Associated Publications—The Northwestern Miller, The American Baker, Farm Store Merchandising, Feedstuffs, Milling Production.

# MEETING MEMOS

Jan. 6-7—Colorado Fertilizer Conference, seventh annual meeting, Student Union Building, Colorado State University, Ft. Collins, Colo.

Jan. 6-7—Texas Fertilizer Conference, Texas A&M, College Station, Texas.

Jan. 9—National Plant Food Institute, Northeast Industry Advisory Committee meeting, Biltmore Hotel, New York City.

Jan. 21-23—Southern Weed Conference, 12th annual meeting, Washington-Youree and Captain Shreve Hotels, Shreveport, La., Dr. Walter K. Porter, Jr., secretary-treasurer.

Jan. 22—Seventh Annual Fertilizer Dealers Day, Oregon State College, Corvallis, Ore.

Feb. 9-10—National Cotton Council, 21st annual meeting, Dinkler Plaza Hotel, Atlanta, Ga.

Feb. 18-20—Midwestern Chapter of the National Shade Tree Conference, 14th annual meeting, LaSalle Hotel, Chicago, Noel B. Wysong, secretary.

Meeting Memos listed above are being listed in this department this week for the first time.

Jan. 7-8—Fertilizer Short Course, Iowa State College, Ames.

Jan. 7-8—Fifth Annual Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 7-9—Thirteenth Annual Northeastern Weed Control Conference, Hotel New Yorker, New York.

Jan. 8-9—Fifth Annual Mississippi Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 12-13—Ohio Pesticide Institute, annual winter meeting, Neil House, Columbus, Ohio. J. D. Wilson, Secretary, Agricultural Experiment Station, Wooster, Ohio.

Jan. 13—Pesticide meeting to discuss current recommendations, Rm. 232, Agricultural Experiment Station Building, University of Kentucky, Lexington.

Jan. 13-14—Georgia Plant Food Educational Society, Annual Meeting, Georgia Center for Continuing Education, Athens, Ga., J. Fielding Reed, 710 Mortgage Guarantee Bldg., Atlanta, secretary-treasurer.

Jan. 13-15—Ninth Annual Fertilizer Dealers Training Conference, Pershing Municipal Auditorium, Lincoln, Neb.

Jan. 20-22—California Weed Conference, Miramar Hotel, Santa Barbara, Cal.

Jan. 21-22—Northwest Agricultural Chemicals Industry Conference,

Benson Hotel, Portland, Ore.; George Kitzmiller, Pacific Cooperatives, Portland, conference chairman.

Jan. 21-23—Western Cooperative Spray Project, Benson and Imperial Hotels, Portland, Ore.

Jan. 22-24—Agricultural Aircraft Assn., Senator Hotel, Sacramento, Cal.; Wanda Branstetter, Chandler Field, Fresno, Cal., Executive Secretary.

Jan. 27-28—Insecticide-Fungicide Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Jan. 27-28—Nematology Workshop, Portland, Ore., sponsored by Shell Chemical Corp.

Jan. 27-28—Soil Science Society of North Carolina, Williams Hall, North Carolina State College, Raleigh.

Jan. 28-29—Illinois Custom Spray Operators' Training School, 11th annual meeting, University of Illinois, Urbana.

Jan. 29—South Dakota Fertilizer Dealer Short Course, South Dakota State College, Brookings, S.D.

Jan. 29-30—Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver. D. E. Garrison, Box 623, Greeley, Colo., secretary.

Feb. 10-12—Agricultural Chemicals Conference, sixth annual meeting, Texas Technological College, Lubbock, Texas.

Feb. 12-13—Midwestern Agronomists-Fertilizer Industry Representatives, 11th annual meeting, Edgewater Beach Hotel, Chicago, Ill., sponsored by National Plant Food Institute.

Feb. 13—National Safety Council, executive committee of the fertilizer section, winter meeting, Heart of Atlanta Motel, Atlanta, Ga.

Feb. 24-25—Alabama Pest Control Conference, Alabama Polytechnic Institute, W. G. Eden, Secretary-Treasurer, Alabama Association for Control of Economic Pests, Alabama Polytechnic Institute, Auburn, Ala.

March 17—Western Agricultural Chemicals Assn. spring meeting, Hotel Miramar, Santa Barbara, Cal. C. O. Barnard, executive secretary.

June 9-10—Seventeenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Velda Rose Motel, Hot Springs, Ark.; Bruce Poundstone, University of Kentucky, Lexington, Ky., secretary-treasurer.

July 7-9—Pacific Northwest Plant Food Assn., 10th Annual Regional Fertilizer Conference, Tacoma, Wash.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

## Southern Weed Meeting Set for Jan. 21-23

SHREVEPORT, LA.—A discussion of agricultural chemicals in southern farming of the future by Eugene Butler, editor of the Progressive Farmer, Dallas, Texas, will open the general session of the 12th annual meeting of the Southern Weed Conference.

The meeting will be held at the Washington-Youree and Captain Shreve hotels Jan. 21-23, according to Dr. Walter K. Porter, Jr., of Louisiana State University. Dr. Porter is secretary-treasurer of the conference.

John W. Mitchell, head of the growth regulator and antibiotic laboratory, Crops Research Division, U.S. Department of Agriculture, will follow Mr. Butler with an outline of recent developments in the field of growth-regulating chemicals. The third speaker at the general session, L. M. Stahler, manager of agricultural sales department of U.S. Borax and Chemical Corp., Los Angeles, will discuss research and marketing weed control by industry.

The remaining program for the three-day meeting will feature discussions of soil-applied herbicides, control of woody plants, aquatic weeds, extension programs on weed control, public health aspects of weed control, fundamental research, weed control in grain crops, and general weed control.

Among the topics to be reported on at these sessions are interaction of herbicides and gibberellic acid on nutgrass, use of granular and pelletized herbicides, and preliminary evaluation of several materials as

## Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care of this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of \$11 per column inch.

All Want Ads cash with order.

## MACHINERY FOR SALE

FOR SALE—USED ½ TON STEADMAN Mixer. C. Roy Curtis & Son, Inc., Marion, N. Y.

FOR SALE—DISMANTLING A FERTILIZER plant near Nashville, Tenn. All machinery is for sale. Items include: 4'x14' Gyroset screen, two Steadman 20"x18" hammer mills, many conveyors, two St. Regis valve packers, gas dryer 25'x4', Universal 1020 crusher, 1½ ton mixer, plus many more. Plant open for inspection. Write Ad No. 4332, Croplife, Minneapolis 40, Minn.

## MISCELLANEOUS

KILL BRUSH at low cost with amazing R-H Brush Rhap. Will not injure grasses, grains, cattle, or other animals. See your dealer, or write Reesor-Hill Corporation, Box 36CL, Jacksonville, Ark.

BRUSH AND WEED KILLER  
KILL SUBMERSED water weeds which foul up motor propellers, tangle fishing gear and choke irrigation ditches with R-H Granular Weed Rhap. Inexpensive, easy to use, sure results. For details write Reesor-Hill Corporation, Box 36CL, Jacksonville, Ark.

pre-planting and pre-emergence herbicides for cotton, corn, soybeans, and milo.

On the afternoon of Jan. 22 a demonstration of a centrifugal sprayer for invert emulsions will be given by Otto F. Campbell, Campbell Air Service, and John L. Kirch, Amchem Products, Inc.

## INDEX OF ADVERTISERS

The index of advertisers is provided as a service to readers and advertisers. The publisher does not assume any liability for errors or omissions.


Abrasion & Corrosion Eng. ....	Kraft Bag Corp. ....
Allied Chemical Corp., Nitrogen Div. ....	McCall, Tom, and Associates, Inc. ....
Amchem Products, Inc. ....	Maas, A. R., Chemical Co. ....
American Potash & Chemical Corp. ....	Merck & Co. ....
American Potash Institute ....	Meredith Publishing Co. ....
Anco Manufacturing & Supply Co. ....	Meyer, Wilson & Geo., & Co. ....
Armour Fertilizer Works ....	Mid-South Chemical Corp. ....
Ashcraft-Wilkinson Co. ....	Miller Chem. & Fert. Corp. ....
Baker, H. J. ....	Miller Publishing Co. ....
Baughman Manufacturing Co., Inc. ....	Mississippi River Chem. Corp. ....
Bemis Bro. Bag Co. ....	Monsanto Chemical Co. ....
Blue, John, Co. ....	National Distillers & Chemical Corp. ....
Bradley & Baker ....	National Potash Co. ....
Broyhill Company, The ....	Naugatuck Chemical Div., U. S. Rubber Co. ....
Burgess Publishing Co. ....	Niagara Chemical Division ....
Chantland Mfg. Co. ....	Northern Peat Moss ....
Chase Bag Co. ....	Northwest Nitro-Chemicals, Ltd. ....
Chemagro Corp. ....	Olin Mathieson Chemical Corp. ....
Chemical Eng. Serv. Div. of ....	Pacific Coast Borax Co. ....
Manitowoc Shipbuilding, Inc. ....	Penick, S. B., & Co. ....
Chemical Insecticide Corp. ....	Pennsalt of Washington Div. of ....
Clover Chemical Co. ....	Pennsalt Chemical Corp. ....
College Science Publishers ....	Phillips Chemical Co., a subsidiary of ....
Collier Carbon & Chemical Corp. ....	Phillips Petroleum Co. ....
Commercial Solvents Corp. ....	Potash Company of America ....
Consolidated Mining & Smelting Co. ....	Raymond Bag Co. ....
Crown Zellerbach Corp. ....	Roberts Chemicals, Inc. ....
Dallas Tank Mfg. Co. ....	Sackett, A. J., & Sons ....
Davison Chemical Co. ....	Shattuck, S. W., Chemical Co. ....
Deere, John, & Co. ....	Shell Chemical Corp. ....
Dempster Mill & Mfg. Co. ....	Simonsen Mfg. Co. ....
Diamond Alkali Co. ....	Sinclair Chemicals, Inc. ....
Dow Chemical Co. ....	Smith-Douglas Co., Inc. ....
E. I. du Pont de Nemours & Co., Inc. ....	Smith-Rowland Co., Inc. ....
Duval Sulphur & Potash Co. ....	Sohio Chemical Co. ....
Eastern States Petroleum & Chem. Corp. ....	Southern Nitrogen Co. ....
Emulsol Chemical Corp. ....	Southwest Potash Corp. ....
Escambia Chemical Corporation ....	Spencer Chemical Co. ....
Flexo Products, Inc. ....	Spraying Systems Co. ....
Food Machinery & Chemical Corp. ....	Standard Oil Co. ....
Frontier Chemical Co. ....	Stapan Chemical Co. ....
Gates Rubber Co. ....	Stewart-Warner Corp. ....
Geigy Agric. Chemicals ....	Successful Farming ....
Grace Chemical Co. ....	Tennessee Corp. ....
Grand River Chemical Div. of Deere & Co. ....	Texas Gulf Sulphur Co. ....
Hanson Equipment Co. ....	Union Bag-Camp Paper Corp. ....
Harshaw Chemical Co. ....	U. S. Borax & Chem. Corp. ....
Henderson Mfg. Co. ....	U. S. Industrial Chemicals Co. ....
Hercules Powder Co. ....	U. S. Phosphoric Products Division ....
Highway Equipment Co. ....	U. S. Potash Co. ....
Hough, Frank G., Co. ....	U. S. Rubber Co., Naugatuck Chem. Div. ....
Inland Chemical Corp. ....	U. S. Steel Corp. ....
International Minerals & Chemical Corp. ....	Veliscol Chemical Corp. ....
Johns-Manville Corp. ....	Wisconsin Eqpt. & Distr. Co. ....
Jones, Robin, Phosphate Co. ....	
Kalo Inoculant Co. ....	
Kent, Percy, Bag Co. ....	

## CALENDAR FOR 1958-59

DECEMBER	JANUARY	FEBRUARY	MARCH
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4 5 6	1 2 3	1 2 3 4 5 6 7	1 2 3 4 5 6 7
7 8 9 10 11 12 13	4 5 6 7 8 9 10	8 9 10 11 12 13 14	8 9 10 11 12 13 14
14 15 16 17 18 19 20	11 12 13 14 15 16 17	15 16 17 18 19 20 21	15 16 17 18 19 20 21
21 22 23 24 25 26 27	18 19 20 21 22 23 24	22 23 24 25 26 27 28	22 23 24 25 26 27 28
28 29 30 31	25 26 27 28 29 30 31		29 30 31
APRIL	MAY	JUNE	JULY
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4	1 2	1 2 3 4 5 6	1 2 3 4
5 6 7 8 9 10 11	3 4 5 6 7 8 9	7 8 9 10 11 12 13	5 6 7 8 9 10 11
12 13 14 15 16 17 18	10 11 12 13 14 15 16	14 15 16 17 18 19 20	12 13 14 15 16 17 18
19 20 21 22 23 24 25	17 18 19 20 21 22 23	21 22 23 24 25 26 27	19 20 21 22 23 24 25
26 27 28 29 30	24 25 26 27 28 29 30	28 29 30	26 27 28 29 30 31
AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1	1 2 3 4 5	1 2 3	1 2 3 4 5 6 7
2 3 4 5 6 7 8	6 7 8 9 10 11 12	4 5 6 7 8 9 10	8 9 10 11 12 13 14
9 10 11 12 13 14 15	13 14 15 16 17 18 19	11 12 13 14 15 16 17	15 16 17 18 19 20 21
16 17 18 19 20 21 22	20 21 22 23 24 25 26	18 19 20 21 22 23 24	22 23 24 25 26 27 28
23 24 25 26 27 28 29	27 28 29 30	25 26 27 28 29 30 31	29 30
30 31			

# Croplife

the weekly  
newspaper of the  
agricultural  
chemicals  
industry  
announces an  
all new



Beginning  
January 19, 1959

## PRODUCTION EDITION

**FOR MANUFACTURERS OF CHEMICALS FOR AGRICULTURE**

New, added circulation  
at no added cost!

New, deeper penetration  
in your prime market!

Circulated exclusively to production  
and management!

Edited exclusively for production  
and management!

Here's an up-to-date, authoritative source on problems of liquid and dry formulation of pesticides, fertilizer mixing, carriers, equipment and maintenance, bagging and packaging, storage, safety, materials handling—and many more items that are the prime concern of your prospects! Here are "case history" articles, trade news, patent and trademark information.

It's the new *Fertilizer-Pesticide Production Edition* of Croplife . . . published every 4th week beginning January 19, 1959 . . . aimed directly at production men and plant managers . . . giving you a fully validated, named circulation of approximately 8,500 top prospects in the fast-growing agricultural chemical field. Now . . . while you're looking for ways to make '59 a bigger, better year for you, reserve your space in Croplife's Jan. 19 *Fertilizer-Pesticide Production Edition*. Plan a year-long program in Croplife to reach the complete buying team—production men and plant managers—of the fertilizer and pesticide fields. Write, wire or call your nearest representative!



**THE MILLER PUBLISHING COMPANY . . . Specializing in business journalism since 1873**

2501 Wayzata Blvd., Minneapolis, Minn.

#### BRANCH OFFICES

Eastern States  
Murray Hill 2-2185  
551 Fifth Ave.  
New York 17, New York

Central States  
Harrison 7-0515  
141 W. Jackson Blvd.  
Chicago 4, Ill.

Southwestern States  
Victor 2-1350  
Board of Trade Bldg.  
Kansas City 5, Mo.

Northwestern States  
Franklin 4-5200  
P.O. Box 67  
Minneapolis 40, Minn.